National Aeronautics and Space Administration

Ames Research Center
Moffett Field, California 94035

May 30, 2018

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
Department of Parks & Recreation
1725 23rd Street, Suite 100
Sacramento, CA 95816

Attn: Mr. Mark Beason

Subject: Section 106 Consultation for Building N206A Roof Access Stair Project at Ames Research Center, Moffett Field, California

Dear Ms. Polanco:

The National Aeronautics and Space Administration (NASA) requests initiation of consultation under Section 106 of the National Historic Preservation Act (NHPA) for the Building N206A Roof Access Stair Project (project or undertaking) located at Ames Research Center (ARC) at Moffett Field, California. NASA determined that this project constitutes an undertaking under the NHPA. NASA requests your review and consultation concerning the attached analysis of the project, including the project description, the delineation of the Area of Potential Effects (APE), identification efforts, and effects analysis for the project.

NASA proposes to remove and replace steps on the roof of Building N206A, an auxiliary building to the 12-foot Pressure Wind Tunnel, which is currently non-operational. The steps were installed in the mid-1990s as part of a renovation, and are not considered a historic feature of the building. The project would also extend the stairs to a new landing installed at the exterior of the building to access an existing opening in the second story.

For the purposes of this undertaking, one resource in the APE, Building N206A, is being treated as a historic property. Based on the analysis conducted by an architectural historian who meets the Secretary of the Interior's professional qualifications standards in architectural history and history, NASA has determined that the undertaking's impact would not constitute an adverse effect due to its minimal impact on the ability of the potential historic property to convey its historical associations.

NASA requests the State Historic Preservation Officer's (SHPO) concurrence on NASA's finding of No Adverse Effect related to this project, pursuant to 36 Code of Federal Regulations (CFR) 800.5(b). NASA requests the SHPO's response within 30 days of receipt of this letter, as specified in 36 CFR 800.5(c).

Please contact me at jonathan.d.ikan@nasa.gov or at (650) 604-6859 with your comments or questions.

Sincerely,

Jonathan Ikan
Center Cultural Resources Manager

Ames Research Center
Ames Research Center, MS 213-8
Moffett Field, California 94035

cc:
HQ/EMD/Ms. Klein, Ph.D., RPA

Enclosure
Memorandum, prepared by AECOM, dated May 30, 2018.

AECOM
M/S 213-8, Building 213
Room 214
Moffett Field, CA 94035
www.aecom.com

650.604.4285 tel
650.968.2069 fax

Memorandum

To	Jonathan Ikan, Cultural Resources Manager, National Aeronautics and Space Administration (NASA)	Page	1
Subject	Ames Research Center (ARC) Building N206A Roof Access Stairs Project		
From	Trina Meiser, Senior Architectural Historian		
Date	May 30, 2018		

AECOM prepared this memorandum in support of NASA's responsibilities under Section 106 of the National Historic Preservation Act (NHPA) for the Building N206A Roof Access Stair Project (project or undertaking) located at ARC, Moffett Field, Santa Clara County, California (**Attachment A, Figures 1 and 2**). This memorandum includes a description of the undertaking and the Area of Potential Effects (APE), the methodology used to identify and evaluate historic properties within the APE, a description of the affected historic properties, and an assessment of potential effects resulting from the undertaking. This analysis was conducted by Trina Meiser, M.A., Historic Preservation Planning, who meets the Secretary of the Interior's Professional Qualification Standards (36 Code of Federal Regulations [C.F.R.] Part 61) for history and architectural history.

Description of the Undertaking
Building N206A is located along King Road in the NASA Ames Campus. Built in 1946, it is an auxiliary building of the 12-foot Pressure Wind Tunnel (N206). NASA proposes to remove existing wooden steps on the roof that traverse piping systems and replace them with a new, metal stair system that would also provide access to the interior of the building. The new metal stairs would extend to a new landing on the exterior of Building N206A that would access an existing opening. The project includes removal of the existing steps and installation of new stairs and landing, as shown and described in the drawings found in **Attachment B**.

Area of Potential Effects
To address direct effects within the limits of staging and construction for the project, and potential indirect effects to the entire facility, including Buildings N206 and N206A, the APE encompasses the entire 12-foot Pressure Wind Tunnel facility, which is not located in the Ames Wind Tunnel Historic District (**Attachment A, Figures 3 and 4**). The project involves exterior alterations located on the roof at the rear of the eastern side of Building N206A, facing inward to the interior of the wind tunnel facility. It is unlikely that this undertaking would have indirect effects on other nearby significant buildings or resources, because the improvements would not be perceptible from outside of the wind tunnel facility.

Identification of Historic Properties
The APE has been previously studied for cultural resources. Buildings N206 and N206A were evaluated in 2005 (Page and Turnbull 2006). The survey found that N206 was not eligible for the NRHP due to loss of integrity. However, Building N206A was found eligible as a potential contributor to a district that appears eligible for local listing or designation through survey evaluation (recorded as NRHP Code 5D3) (Page and Turnbull 2006). Department of Parks and Recreation (DPR) 523 Forms are included in **Attachment C**. AECOM revisited Buildings N206 and N206A on May 14, 2018, to observe the existing conditions of Buildings N206 and N206A and determine if any alterations had occurred since the previous recording. No major alterations were observed.

Building N206 – 12-foot Pressure Wind Tunnel
Building N206 was originally built in 1946 as the 12-foot Low Turbulence Pressure Wind Tunnel (**Plate 1**).

Plate 1. The original 12-foot Low Turbulence Wind Tunnel, 1946. (Source: Hartman 1970)

The wind tunnel was completely reconstructed from 1991 to 1994 and opened in 1995. The facility consists of a main building attached to a steel, wind tunnel structure (**Plate 2**). The building has a two-story façade along King Road that contains the main entrance. The front of the building is rectangular, with a concrete foundation, flat roof, and flush, horizontal, panel siding. Fenestration includes a ribbon of windows in the second story. Behind the front section, a three-story, high-bay building section connects to the steel structure of the wind tunnel, and has a low-pitched side-gable roof and corrugated metal siding. The top story of the section has a window course. The wind tunnel is about 300 feet long by 100 feet wide, with a 12-foot test section and a maximum diameter of 68 feet. It is powered by a 15,000 horsepower motor, and supported by Building N206A, an auxiliary building originally constructed to contain air-handling equipment.

Beginning in 1946, the facility was extensively used to test models of most U.S. commercial aircraft, including the Boeing 737, 757 and 767; Lockheed L-1011; and McDonnell Douglas DC-9 and DC-10. The pressurized wind tunnel allowed for high-speed and controlled turbulence model testing, and became “one of Ames’ workhorse wind tunnels"(NASA 1995). By 1986, the wind tunnel structure “began to exhibit serious fatigue after 41 years of service" and developed cracks that reduced its pressurization capacity (NASA 1995). The wind tunnel was subsequently removed, and a new 12-foot pressurized wind tunnel with a closed-loop pressure vessel and an innovative air lock system was completed in November 1994. The new tunnel was designed to test aircraft models at airspeeds up to Mach 0.61 and up to six atmospheres of pressure, and was the only large-scale, pressurized, low turbulence, subsonic wind tunnel in the United States. It provided unique testing capabilities for the development of high-lift systems on commercial transport and military aircraft. The facility stopped

functioning as a wind tunnel in 2000, but was used for model preparation. The wind tunnel was officially closed in 2003 due to budgetary constraints, and has not operated as a wind tunnel since.

Although Building N206 is a unique facility that provided specific capabilities for research and development, it was substantially rebuilt in the 1990s, which compromised its historic integrity and, therefore, its NRHP eligibility, as either an individual resource or as a potential contributing resource to the Ames Wind Tunnel Historic District or an alternative historic district potentially based on unified architectural design on the Ames campus. It has not achieved exceptional significance since it reopened in 1995 and closed again in 2003. Although in future it may meet NRHP criteria, it does not currently exhibit exceptional significance under the NRHP criteria. It was not included in the Ames Wind Tunnel Historic District (listed January 2017) because of its lack of association and integrity within the period of significance of the district (1939-2011).

Plate 2: Building N206, the 12-foot Pressure Wind Tunnel, view facing southeast.

Building N206A – 12-foot Pressure Wind Tunnel Auxiliary Building
Building N206A (**Plate 3**) is a two-story reinforced concrete building with a concrete foundation and a flat roof. The building has a rectangular plan with a square tower at the southeast corner that attaches to the 12-foot Pressure Wind Tunnel. The building, like others dating from the mid-20th century at Ames, exhibits Moderne architectural style influences. The exterior walls have scored horizontal bands and symmetrical and banded fenestration. Fenestration includes operable, multi-lite wood windows and metal louvered vents. The entrance to the building is on the east side facing the wind tunnel.

Built in 1946 as an auxiliary building for the 12-foot Low Turbulence Wind Tunnel, Building N206A contained the air-handling equipment for the wind tunnel, including pumps, air coolers, dehumidifiers, and electric motors (Hartman 1970) (**Plate 4**). The building was extensively renovated in the 1990s as

part of the reconstruction of Building N206, but exterior features of the building remained relatively unchanged.

Building N206A was previously evaluated as an eligible resource through survey of the Ames campus in 2005 (Page and Turnbull 2006). The previous evaluation found that Building N206A was significant for its association with the 12-foot Pressure Wind Tunnel and as one of several research and support buildings built by the National Advisory Committee for Aeronautics (NACA) at Ames between 1940 and 1958 that expressed industrial, Moderne architectural details. It was identified as a possible contributor to a historic district based on these architectural qualities (Page and Turnbull 2006).

Due to loss of integrity, Building N206 is not eligible for the NRHP (Page and Turnbull 2006), and Building N206A, which was constructed as an auxiliary structure to Building N206, does not possess independent significance related to events, themes, or patterns in history. Although Building N206A is an original feature of the 12-foot Pressure Wind Tunnel facility, its integrity related to its associations with scientific research and development was compromised by the reconstruction of the wind tunnel in the 1990s. Although Building N206A may share the significance of the Ames Wind Tunnel Historic District and dates to the district's period of significance, it was not listed as a contributor to the district due to the lack of integrity of the 12-foot Pressure Wind Tunnel facility, as a whole. Building N206A is not significant under Criterion A.

Several NACA engineers contributed to the design of the original 12-foot Low Turbulence Pressure Wind Tunnel in the late 1930s and 1940s, but Carlton Bioletti, who was among the first NACA engineers to arrive at Ames when it was established in 1939, is credited with the overall design of the wind tunnel (Hartman 1970). However, Bioletti's contributions were lost when the wind tunnel was rebuilt in the 1990s. The original main office building section ofN206 and N206A used the standard office building façade aesthetic used throughout the early Ames campus, and is not attributable to a specific designer. The enormous body of work conducted within the wind tunnel throughout its history is not specifically associated with important individuals. Building N206A is not significant under Criterion B.

Building N206A exhibits some of the Moderne architectural details that are characteristic of the Ames campus, including smooth and scored concrete exterior siding, rectilinear configurations, industrial windows, flat roofs, and horizontality. While not eligible for individual listing in the NRHP, Building N206A was identified for its contextual value in a potential historic district (Page and Turnbull 2006). To date, no historic district has been identified and evaluated, and it is beyond the scope of this evaluation to make an assessment of a potential historic district. Therefore, for the purposes of this undertaking, Building N206A will be treated as potentially eligible as a contributor to an as-yet unidentified historic district within Ames campus that would be unified by exterior Moderne architectural features and potentially eligible under Criterion C.

Building N206A is well documented and is unlikely to yield additional information important to history or prehistory. It is not eligible under Criterion D.

As an auxiliary structure of the 12-foot Pressure Wind Tunnel facility, Building N206A lost integrity when the original wind tunnel was replaced. It retains integrity of location and setting, and to some extent, design, materials, workmanship, feeling, and association. It remains an auxiliary building to a wind tunnel within the Ames campus, and retains the exterior architectural features that may make it a potential contributor to a historic district.

Plate 3. Building N206A and the 12-foot Pressure Wind Tunnel (left), view facing south.

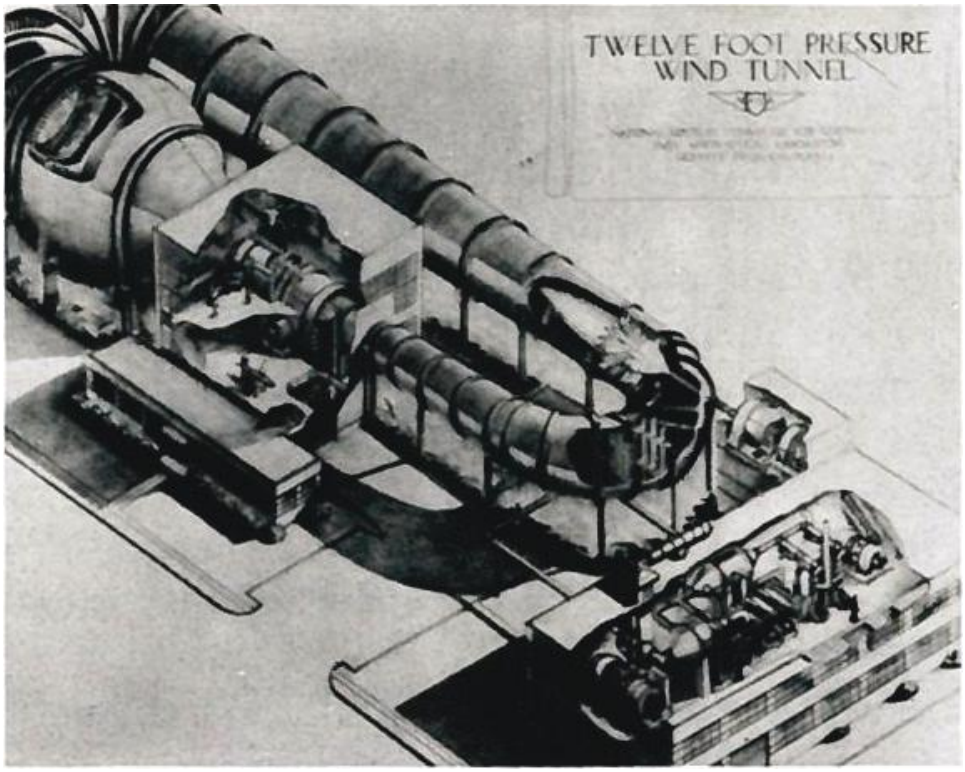


Plate 4. Cutaway drawing, Building N206A at bottom right. (Source: Hartman 1970)

Affected Historic Properties
For the purposes of this undertaking, Building N206A will be considered an eligible resource, as a potential contributor to an as-yet unidentified historic district within Ames campus that is significant under Criterion C for its Moderne architectural features. As identified in the 2005 survey (Page and Turnbull 2006), contributing features include:

> "the concrete bands that articulate the first and second floors; the tripartite scoring at the concrete piers that align with the window mullions; the grouped, industrial style windows that form a consistent window plane; and the concrete canopies with rounded corners. The concrete banding that wraps around the buildings articulates a definite horizontality, a common language to Moderne and International style buildings. The buildings are expressed in concrete with a durable and solid nature, yet also portray an airy feel with the industrial ribbon windows."

Character-defining features of the potential district exhibited in Building N206A include its rectilinear form, flat roof, industrial windows, concrete bands, and decorative scoring.

The existing wooden steps that would be replaced as a result of this project are located atop the roof of Building N206A towards the rear of the building (**Plates 5 through 7**). These steps were added to the building in the 1990s as part of the wind tunnel reconstruction. The project would also extend the stairs to allow direct access to the interior of the building through an existing opening in the southeast tower in the second story.

Plate 5. Building N206A, view facing southwest, arrow indicates existing stair to be removed.

Plate 6. Existing stair to be removed.

Plate 7. Existing stair to be removed, terminates along the eastern edge of the roof.

Assessment of Effects

The Criteria of Adverse Effect pursuant to 36 C.F.R. 800.5(a)(1) are applied to assess effects of the undertaking on historic properties within the APE:

> An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative.

Several examples of adverse effects are listed in 36 C.F.R. 800.5(a)(2). The following assessment examines the undertaking under each of those examples, including an analysis of compliance with the Secretary of the Interior's Standards for Rehabilitation (Standards) (36 C.F.R. Part 68).

(i) Physical destruction of or damage to all or part of the property

By virtue of the necessity to replace the existing steps, the project would remove the existing steps. Installation of the new stairs would require drilling into the side wall of the building to secure anchors for the stairs and exterior landing. These changes to historic materials would be minimal.

(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's standards for the treatment of historic properties (36 C.F.R. part 68) and applicable guidelines

With the SHPO's agreement, if a property is restored, rehabilitated, repaired, maintained, stabilized, remediated, or otherwise changed in accordance with the Standards, then it will not be considered an adverse effect. The following is an assessment of the undertaking for compliance with the Standards and guidelines (NPS 2017).

1. *A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces and spatial relationships.*

   The project would have no change on the use of the building.

2. *The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.*

   The project would not change the historic character of the potential historic property. The existing steps are not a distinctive feature of the facility, and their removal and replacement would not impair the building's ability to convey its potential significance. No significant materials, spaces or spatial relationships of the potential historic property would be modified as a result of this project.

3. *Each property will be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.*

   Not applicable.

4. *Changes to a property that have acquired historic significance in their own right will be retained and preserved.*

   Not applicable.

5. *Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.*

   The existing steps that would be removed are not original, distinctive, or character-defining.

6. *Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.*

The existing steps are not historic features.

7. *Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.*

   Not applicable.

8. *Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.*

   Not applicable.

9. *New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.*

   This project proposes to install new stairs that would be compatible with the existing facility in materials and design. Installation of the new stairs and roof access would require drilling into the exterior wall to secure the new system. The changes would be minimal and would not compromise the integrity of the historic materials (concrete exterior wall). Also, the new stair system would be located in a discreet corner of the facility.

10. *New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.*

    Installation of the new stairs and roof access would be permanent, but the scale of the change is minor in comparison with the essential form of the potential historic property and its environment. The installation of the stairway would have minimal structural and visual intrusion on the building, and its removal would have a similarly minimal effect.

In summary, the project meets the Standards, as it proposes to remove a non-significant, non-character-defining feature of the building and to install a compatible feature that would have minimal physical or visual intrusion on the building. The impact of this project would be negligible on the essential form and integrity of the building.

(iii) Removal of the property from its historic location

Not applicable.

(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance

Not applicable.

(v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features

The installation of the new stair system would be located in a visually discreet area of the facility, and is compatible with the industrial nature of the building.

(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization

Not applicable.

(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance

Not applicable.

Conclusion
Based on this analysis, the project would conform to the Standards and does not present other potential adverse effects or meet the Criteria of Adverse Effects. The undertaking as proposed would result in No Adverse Effect on Building N206A, a potential historic property in the APE.

References
NASA. 1995. “Refurbished Wind Tunnel to Open at Ames Research Center.” Press Release 95-143, dated August 21, 1995. Available at https://www.nasa.gov/home/hqnews/1995/95-143.txt.

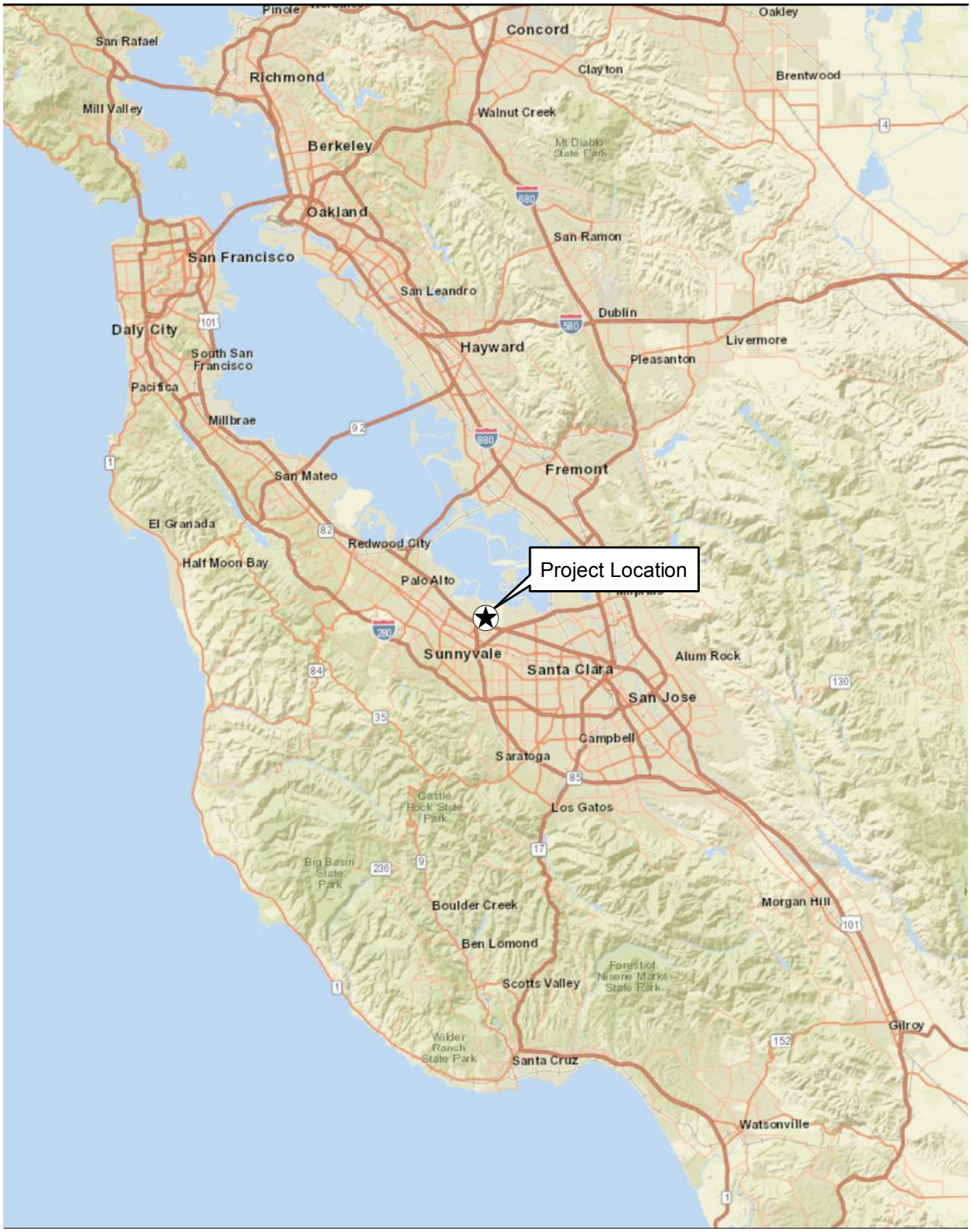
NPS (National Park Service). 2017 (revised). *The Secretary of the Interior’s Standards for the Treatment of Historic Properties and Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings*.

Page and Turnbull, Inc. 2006. *NASA Ames Research Center, Moffett Field, California, Survey and Rehabilitation Recommendations*. On file at NASA Ames Research Center.

Attachments
A. Figures
B. Architectural Drawings (AECOM 2018)
C. DPR 523 Forms

ATTACHMENT A

FIGURES



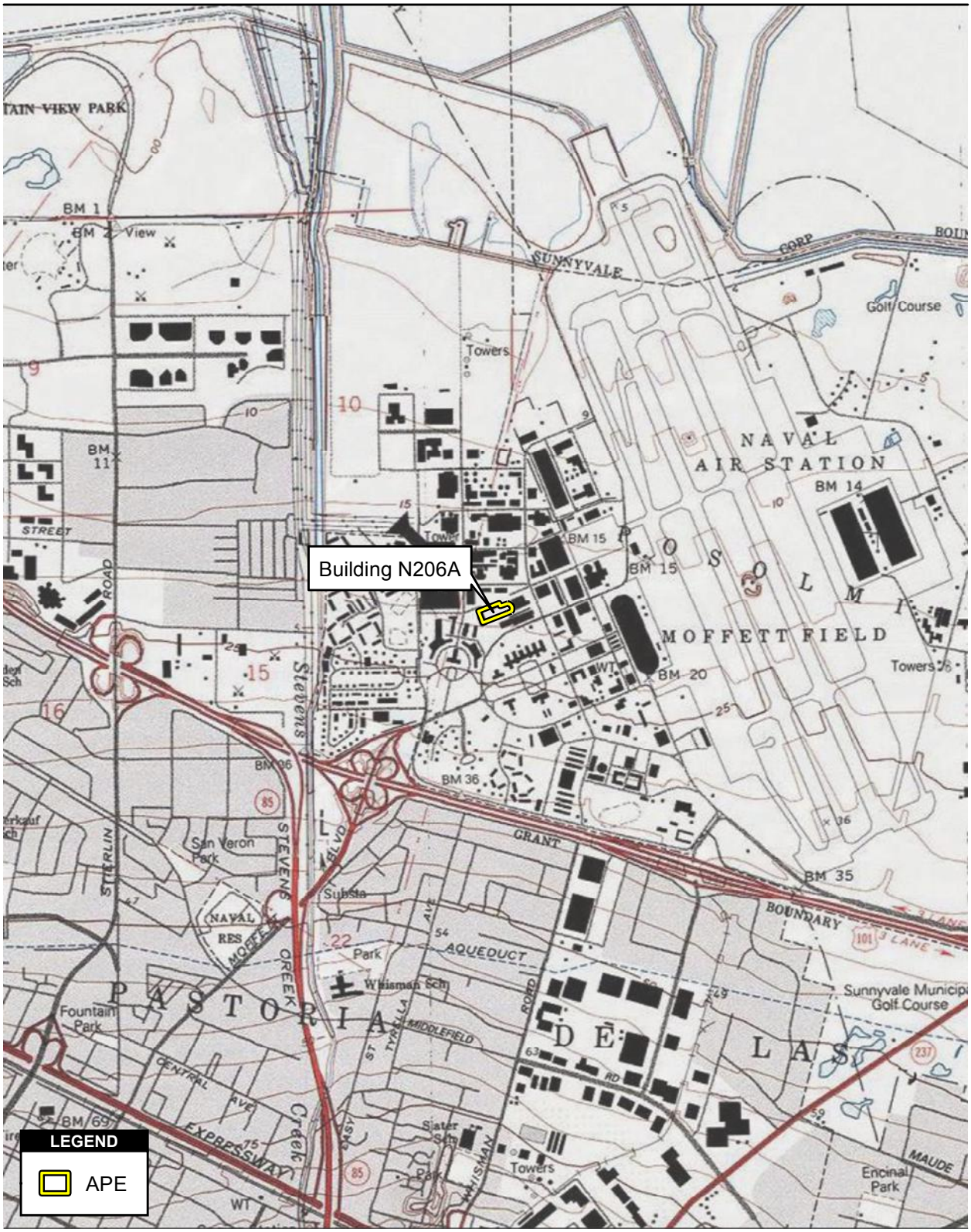
Source: ESRI, AECOM, NASA

0 5 10 20 Miles

Scale: 1 = 633,600; 1 inch = 10 mile(s)

Figure 1
Project Location

Path: P:_6032\60327567_NASA_NRHP\900-CAD-GIS\920 GIS\922_Maps\Cultural\BldgN206A_RoofStairAccess\Figure01_ProjectLocation.mxd, 5/4/2018, downsl1



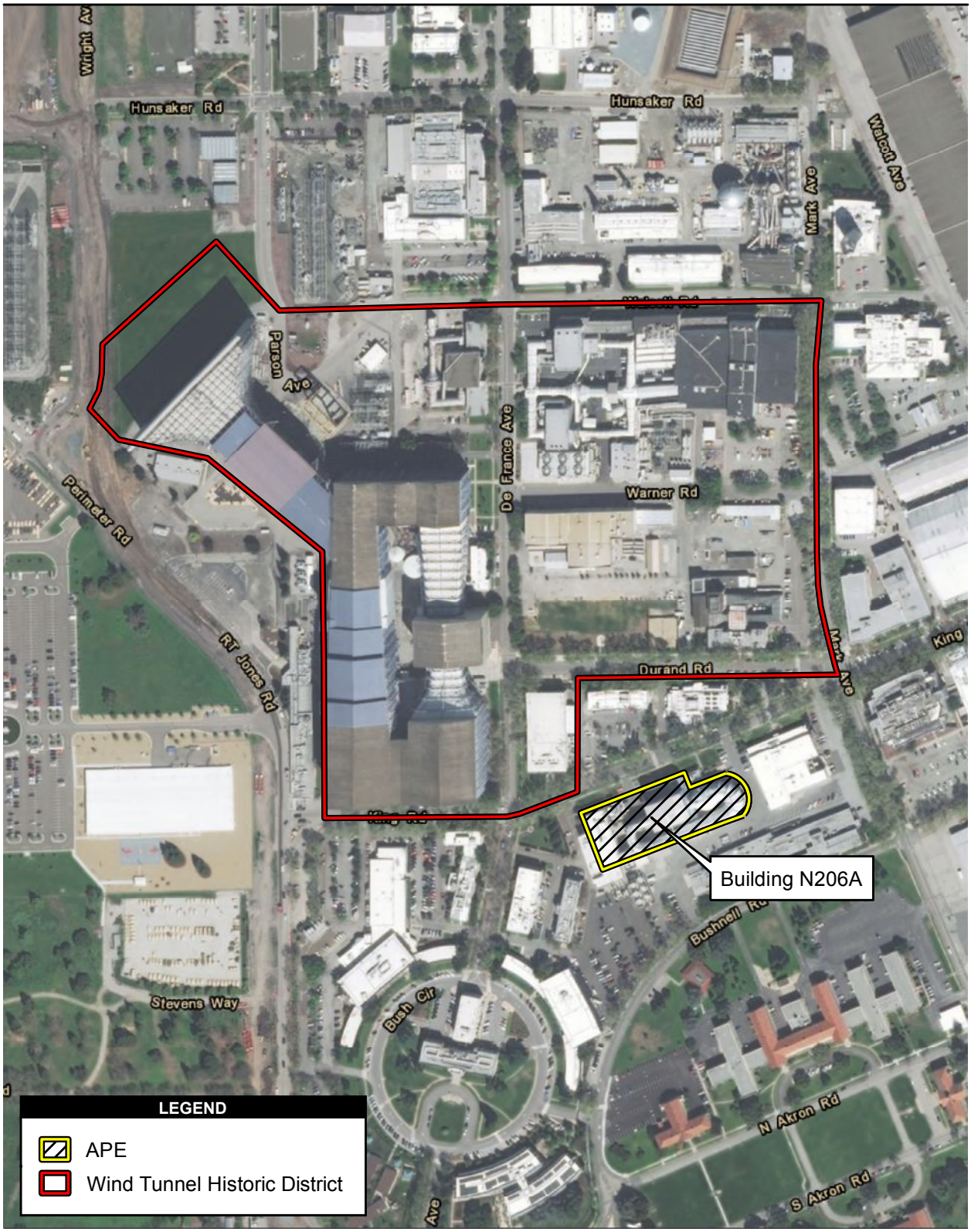
Source: ESRI, AECOM, NASA, National Geographic Society; USGS 7.5' Topographic Quadrangle: Mountain View

0 1,000 2,000 4,000 Feet

Scale: 1 = 24,000; 1 inch = 2,000 feet

Figure 2
APE Map

Path: P:_6032\60327567_NASA_NRHP\900-CAD-GIS\920 GIS\922_Maps\Cultural\BldgN206A_RoofStairAccess\Figure02_APE_Topo.mxd, 5/25/2018, downsl1



Source: ESRI, AECOM, NASA, United States Department of the Interior National Park Service

0 200 400 800 Feet

Scale: 1 = 4,800; 1 inch = 400 feet

Figure 3
Wind Tunnel Historic District

Path: P:_6032\60327567_NASA_NRHP\900-CAD-GIS\920 GIS\922_Maps\Cultural\BldgN206A_RoofStairAccess\Figure03_WindTunnel_HistDist.mxd, 5/25/2018, downsl1

Source: ESRI, AECOM, NASA

0 75 150 300 Feet

Scale: 1 = 1,800; 1 inch = 150 feet

Figure 4
Building N206A APE

Path: P:_6032\60327567_NASA_NRHP\900-CAD-GIS\920 GIS\922_Maps\Cultural\BldgN206A_RoofStairAccess\Figure04_APE_Aerial.mxd, 5/30/2018, downsl1

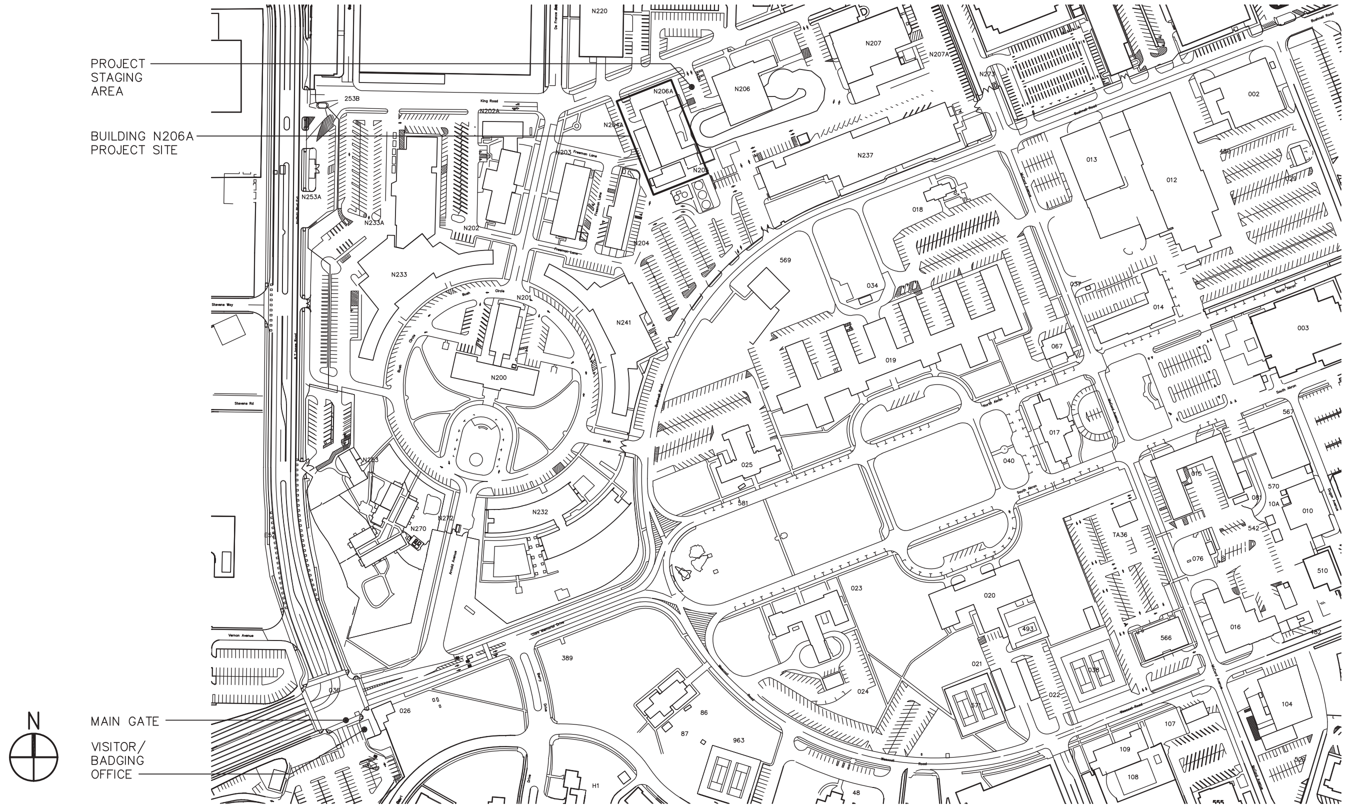
ATTACHMENT B

ARCHITECTURAL DRAWINGS
(AECOM 2018)

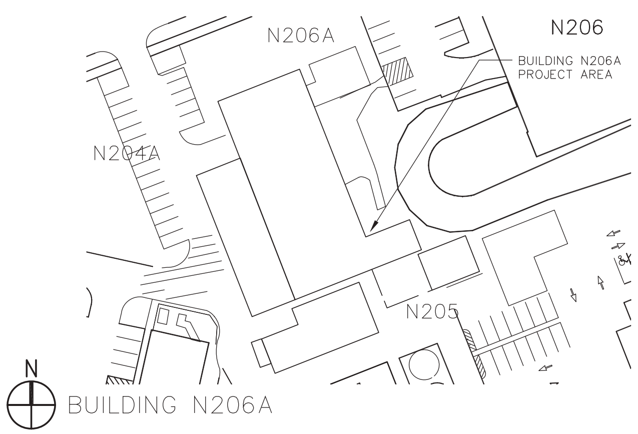
BUILDING N206A ROOF ACCESS STAIRS

DWG NO. A206A-1800-G001

LOCATION MAP



KEY PLAN



GENERAL PROJECT NOTES

1. ANY REQUEST FOR CLARIFICATION OF THE PLANS & SPECIFICATIONS (OR ANY OTHER CONTRACT DOCUMENT) MUST BE SUBMITTED TO THE CONTRACTING OFFICER IN WRITING.
2. THE CONTRACTOR SHALL MAINTAIN AN UP-TO-DATE "AS-BUILT" DRAWING SET AT THE JOBSITE. THE "AS-BUILT" DRAWING SET SHALL BE RED-LINED TO SCALE TO REFLECT ALL APPROVED CHANGES TO THE DESIGN DRAWINGS. THE "AS-BUILT" DRAWING SET SHALL BE TURNED OVER TO THE CONTRACTING OFFICER WITHIN 90 DAYS FROM COMPLETION OF THE PROJECT FOR REVIEW AND APPROVAL.
3. ALL THROUGH PENETRATIONS OF FULL HEIGHT WALLS (BOTH RATED AND NON-RATED) AND FLOOR ASSEMBLIES SHALL BE PROTECTED USING APPROVED AND LISTED FIRESTOPPING MATERIALS/METHODS.

BUILDING/PROJECT INFORMATION

CODES, STANDARDS AND REFERENCED DOCUMENTS

PROJECT DRAWINGS AND SPECIFICATIONS LISTED IN THE DRAWING AND SPECIFICATION INDICES CONSTITUTE THE CONTRACT DOCUMENTS FOR THIS PROJECT. PERFORM ALL WORK ACCORDING TO THE CONTRACT DOCUMENTS AND THE CODES AND STANDARDS LISTED IN APR 8829.1 (AMES PROCEDURAL REQUIREMENT) INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:

CALIFORNIA BUILDING CODE (CBC) – 2016
CALIFORNIA FIRE CODE (CFC) – 2016
CALIFORNIA MECHANICAL CODE (CMC) – 2016
CALIFORNIA ENERGY CODE "TITLE 24" (CEC) – 2016
CALIFORNIA ELECTRICAL CODE (CEC) – 2016
TITLE-24 CBC CHAPTER 11B ACCESSIBILITY STANDARDS – 2016
UNIFORM FEDERAL ACCESSIBILITY STANDARDS (UFAS)
AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) A117.1 – 2010
NATIONAL FIRE PROTECTION ASSOC. FIRE SPRINKLER SYSTEMS, NFPA 13 – 2016
NATIONAL FIRE PROTECTION ASSOC. NATIONAL FIRE ALARM AND SIGNALING CODE, NFPA 72 – 2016
NATIONAL FIRE PROTECTION ASSOC. ELECTRICAL SAFETY REQUIREMENTS, NFPA 70E – 2014
SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA) LATEST EDITION
AMES HEALTH AND SAFETY MANUAL (APR 8715.1).
NASA SAFETY STANDARD FOR FIRE PROTECTION NASA-STD-8719.11A –2008

HEALTH, SAFETY, AND ENVIRONMENTAL

GENERAL REQUIREMENTS:

1. PERFORM ALL WORK IN STRICT ACCORDANCE WITH FED-OSHA, CAL-OSHA, FED-EPA, CAL-EPA, SANTA CLARA COUNTY AND BAAQMD (BAY AREA AIR QUALITY MANAGEMENT DISTRICT) REQUIREMENTS, RWQCB (REGIONAL WATER QUALITY CONTROL BOARD) AND THE SWPPP (STORM WATER POLLUTION PREVENTION PLAN).
2. ALL WORK ON AMES RESEARCH CENTER PROPERTY SHALL COMPLY WITH THE PROVISIONS OF THE AMES HEALTH AND SAFETY MANUAL (APR 8715.1) AND THE AMES ENVIRONMENTAL MANAGEMENT HANDBOOK (APR 8800.3). BOTH DOCUMENTS ARE AVAILABLE ON-LINE AT (NOTE, ADDRESS IS CASE SENSITIVE):
   8715.1: https://procure.arc.nasa.gov/assets/docs/APR1700.1-R/APR1700.1TOC.html
   8800.3: https://procure.arc.nasa.gov/assets/docs/APR8800.3-R/APR8800.3TOC.html
3. ALL WORK SHALL BE IN ACCORDANCE WITH THE AMES HEALTH AND SAFETY MANUAL, APR 8715.1 INCLUDING CHAPTER 27 (CONSTRUCTION), CHAPTER 11 (ELECTRICAL SAFETY), CHAPTER 47 (PORTABLE LADDERS) AND ALL OTHER APPLICABLE CHAPTERS.
4. PROTECT THE SURROUNDING PROJECT SITE FROM FURTHER CONTAMINATION FROM THE DEMOLITION WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SECURITY AND CONTROLLED ACCESS INTO THE WORK SITE.

HEALTH AND SAFETY REQUIREMENTS:

1. CONTRACTOR SHALL SUBMIT A PROJECT SAFETY PLANS/IIPPS AND AHAS/JHAS FOR REVIEW AND APPROVAL TO THE COR AND JOHN LIVACICH, MAIL STOP N-237-14, ROOM 111, JOHN.A.LIVACICH@NASA.GOV, 650-604-3243, PRIOR TO STARTING ANY ON SITE WORK. REFERENCE APR 8715.1 CHAPTER 27.5. ADDRESS PROCEDURES FOR PROTECTING PERSONNEL, AND FOR DEMOLISHING, HANDLING, STORING AND DISPOSING OF HAZARDOUS MATERIAL
2. DESIGNATE A SITE SAFETY & HEALTH OFFICER (SSHO) WITH AUTHORITY TO CORRECT UNSAFE CONDITIONS PER APR 8715.1, CHAPTER 27.1.7. THE SSHO SHALL BE ON-SITE DURING ALL TIMES WHEN WORK IS BEING PERFORMED. "ON-SITE" REFERS TO THE ACTUAL PROJECT SITE.
3. ERECT A SAFETY BULLETIN BOARD AT THE SITE (OR CONSTRUCTION TRAILER IF APPLICABLE) AS PER APR 8715.1, CHAPTER 27. PART 27.3 FORMS, "NOTICES AND PERMITS". POST ALL PERMITS ON THE SAFETY BULLETIN BOARD.
4. HOT WORK PERMIT MUST BE INITIATED PRIOR TO WELDING OR CUTTING; CONTACT FIRE PREVENTION OFFICE AT (650) 604-3112.
5. IF SCAFFOLDING WILL BE USED, PROVIDE SCAFFOLDING DOCUMENTATION INCLUDING TRAINING RECORDS, COMPETENT PERSON, ETC.
6. USE A QUALIFIED LOCATOR TO LOCATE UTILITIES AND LOTO ALL HIGH-PRESSURE AIR. NATURAL GAS. ELECTRICAL AND OTHER HIGH ENERGY SOURCES PRIOR TO WORK PER APR 8715.1 CHAPTER 31 LOCKOUT/TAGOUT. PROTECT WORKERS FROM ARC FLASH AND ELECTRICAL SHOCK PER NFPA 70E. COMPLY WITH THE REQUIREMENT OF APR 8715.1, CHAPTER 11.
7. COMPLY WITH ALL REQUIREMENTS FOR CRANE AND OTHER LIFTING DEVICES AS PER APR 8715.1, CHAPTER 17 "LIFTING DEVICES AND EQUIPMENT".
8. FALL PROTECTION PERFORMED AS PER APR 8715.1, CHAPTER 40, "FALL PROTECTION PROGRAM".
9. CONFINED SPACE ENTRY SHALL COMPLY WITH APR 8715.1 CHAPTER 27.14
10. CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN IF THE PROJECT AFFECTS A ROADWAY. TRAFFIC CONTROL SHALL BE PERFORMED PER CURRENT CALIFORNIA MUTCD. http://www.dot.ca.gov/trafficops/camutcd/camutcd2014rev1.html
11. LASER WORK NEEDS TO CONFORM TO APR 8715.1. CHAPTER 8.
12. CODE QH CONSTRUCTION REPRESENTATIVE SHALL BE INCLUDED IN THE PRE-BID WALK THRU AND IN THE PRE-CONSTRUCTION MEETING.
13. NOTIFY JOHN LIVACICH AT 650 604-3243 PRIOR TO THE START OF ANY CONSTRUCTION WORK.
14. ALL ELECTRICAL WORK OR WORK NEAR ELECTRICAL DEVICES SHALL BE CONDUCTED IN ACCORDANCE WITH NFPA 70E – STANDARDS FOR ELECTRICAL SAFETY IN THE WORKPLACE.

ENVIRONMENTAL REQUIREMENTS:

1. CONTRACTOR SHALL INFORM NASA'S WILDLIFE BIOLOGIST (O:650-604-3532, C:650-963-6647) IF THEY COME ACROSS ANY NESTING BIRDS OR ROOSTING BATS WHILE WORKING ON PROJECT. PRIOR TO STARTING ANY SITE WORK, REQUEST A SITE SURVEY FOR BURROWING OWLS.
2. ARCHITECTURAL COATINGS, ADHESIVES AND SEALANTS (IF USED) SHALL COMPLY WITH BAAQMD REGULATION 8, RULES 3 AND 51. REF: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/Rules%20and%20Regs/reg%2008/rg0803_0709.ashx?la=en
3. NASA IS THE GENERATOR FOR ALL HAZARDOUS WASTE TO BE DISPOSED ON THIS PROJECT. WHERE FEASIBLE, MINIMIZE HAZARDOUS WASTE DEBRIS THROUGH RECLAMATION OR RECYCLING TECHNIQUES. ALL CHEMICALS USED ON-SITE FOR GREATER THAN 30 DAYS WILL NEED TO BE REGISTERED. CONTACT CONTRACTING OFFICER FOR MORE INFORMATION.
4. ADHERE TO THE NASA AMES ASBESTOS AND LEAD MANAGEMENT PLANS AND FEDERAL, STATE AND LOCAL REQUIREMENTS FOR REMOVAL AND DISPOSAL OF MATERIALS CONTAINING ASBESTOS AND/OR LEAD. SEE SPECIFICATION SECTIONS 02 82 14.00 10 AND 02 83 13.00 20. ASSUME DETECTABLE AMOUNTS OF LEAD, ZINC AND OTHER HEAVY METALS IN ALL PAINTED SURFACES WITHIN THE AREA OF THE PROPOSED WORK. ASSUME THAT SOME OF THE CONDUITS BEING REMOVED CONTAIN LEAD OR ASBESTOS CABLING. OSHA REQUIRES THAT FUMES FROM ALL INDOOR WELDING OR CUTTING BE EXHAUSTED TO THE OUTSIDE WITH LOCALIZED EXHAUST VENTILATION AND LEAD PAINT MUST BE REMOVED AT LEAST SIX INCHES AROUND WELD.
5. PRIOR TO DISPOSING/RECYCLING OF EQUIPMENT THAT CONTAINS ANY OILS, THE OILS MUST BE DRAINED AND DISPOSED OF PROPERLY BY TURNING IT OVER TO THE HAZARDOUS WASTE SECTION AT BUILDING 265.
6. IF A GENERATOR OR COMPRESSOR (FUEL TANK) IS TO BE USED, CONTACT THE ENVIRONMENTAL DEPARTMENT AT 650 604-5360 TO DETERMINE IF A TEMPORARY PERMIT IS REQUIRED.
7. ALL CONSTRUCTION AND DEMOLITION ACTIVITIES SHALL BE CONDUCTED IN ACCORDANCE WITH NASA'S HEARING CONSERVATION POLICY. REF APR 1700.1 CHAPTER 29 (USE 8715.1 LINK ABOVE.)

SCOPE OF WORK

SCOPE OF SERVICES INCLUDES PROVIDING DESIGN BUILD SERVICES FOR THE FOLLOWING MAJOR ELEMENTS:

- STAIRWAY CONNECTING SECOND FLOOR TO N206A ROOF

BID ALTERNATES

PROVIDE SEPARATE PRICING, UNIT COSTS, AND/OR ALLOWANCES (SEPARATE FROM BASE BID) FOR EACH OF THE FOLLOWING DESIGN BUILD ELEMENTS AS IDENTIFIED ON THE DRAWINGS:

1. NONE

WRIGHT engineers
7400 West Detroit Street Suite 170
Chandler, AZ 85226
480.483.6111 wrightengineers.com

REGISTERED PROFESSIONAL ENGINEER
TYE HAVEY
No. C65748
Exp. 9/30/19
CIVIL
STATE OF CALIFORNIA
4/26/2018

PROJECT TITLE

BUILDING N206A
ROOF ACCESS STAIRS

DRAWING INDEX

INCORPORATED PROJECT DOCUMENTS

THE FOLLOWING DOCUMENTS ARE PROVIDED AND INCORPORATED BY REFERENCE INTO THE CONTRACT DOCUMENTS:

A. SPECIFICATIONS: AMES LOCAL MASTER SPEC DATED: 07/06/17

DEFERRED SUBMITTALS

THE FOLLOWING DEFERRED SUBMITTALS ARE REQUIRED TO BE SUBMITTED TO THE NASA PERMIT BOARD FOR APPROVAL PRIOR TO CONSTRUCTION:

A. NOT APPLICABLE.

APPROVED FOR CONSTRUCTION
MOFFETT FIELD PERMIT BOARD

CHIEF BUILDING OFFICIAL
PERMIT NO. 18P013

ZONE	REV	DESCRIPTION	DRAWN	DATE	APPRVD

REVISIONS

DRAWN P.KRIZAN	DATE
DESIGNED P.KRIZAN	DATE
CHECKED T.HAVEY	DATE
PROJMGR P.KRIZAN	DATE
REQUESTER JOHN FIDEL	DATE
R&QA	DATE
SAFETY	DATE
SUPERVISOR TONY WONG	DATE
	DATE

Ames Research Center
Moffett Field, California

N206A ROOF ACCESS STAIRS
GENERAL

TITLE SHEET

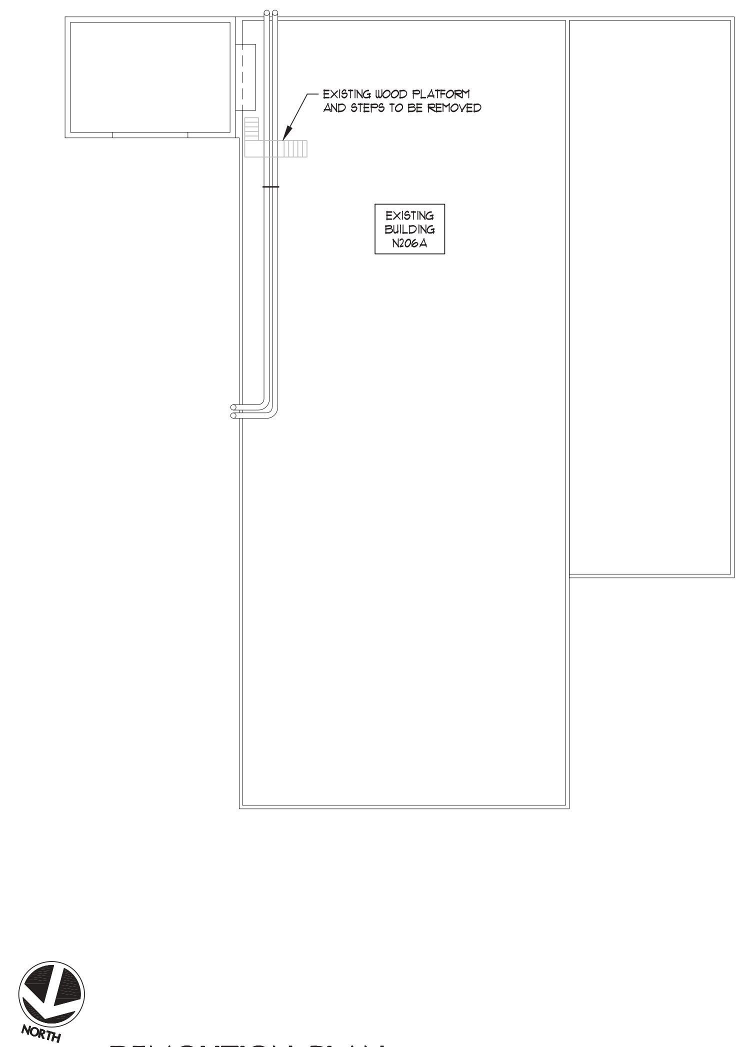
SIZE D | CAGE CODE 25307 | A 206A-1800-G001 | REV
SCALE AS NOTED | INDEX | SHEET 1 OF 5

FILE NAME: G001-172043-G.DWG | DATE: 04.26.2018

WRIGHT PROJECT #: 172043
NARC JOB #:

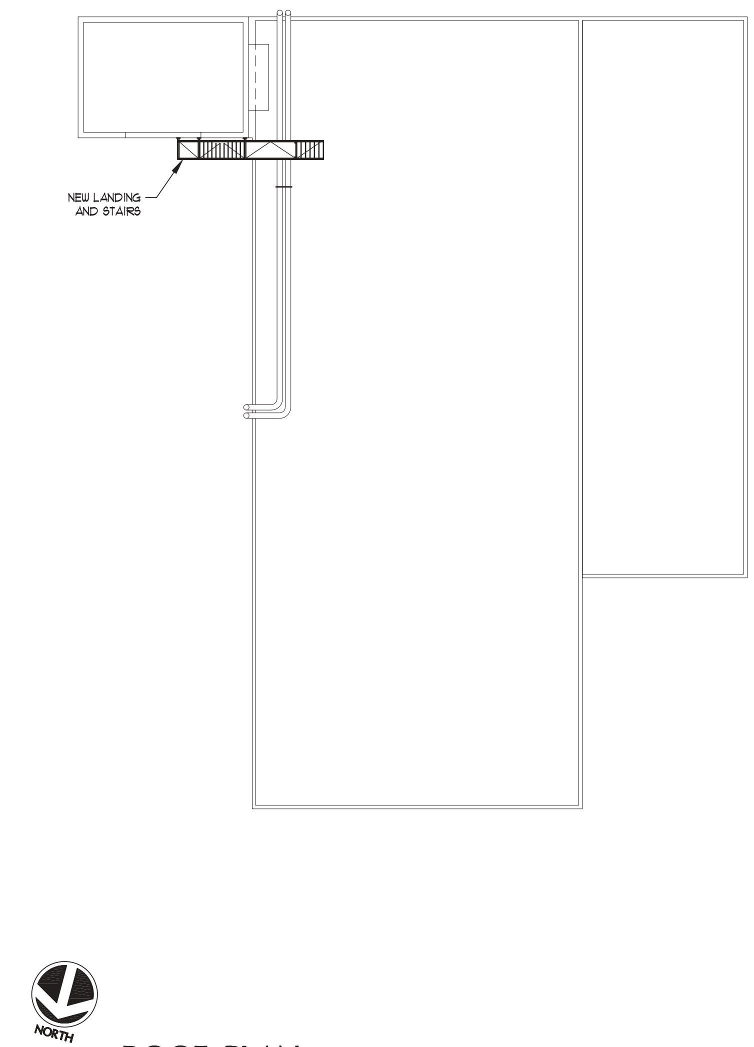
Ver: 02.02.18

DWG NO. A206A–1800–G002 | SH. | REV



DEMOLITION PLAN

SCALE: 1/16" = 1'-0"



ROOF PLAN

SCALE: 1/16" = 1'-0"

APPROVED FOR CONSTRUCTION
MOFFETT FIELD PERMIT BOARD

CHIEF BUILDING OFFICIAL
PERMIT NO. 18P013

ZONE	REV	DESCRIPTION	DRAWN	DATE	APPRVD

REVISIONS

DRAWN P.KRIZAN	DATE
DESIGNED P.KRIZAN	DATE
CHECKED T.HAVEY	DATE
PROJMGR P.KRIZAN	DATE
REQUESTER JOHN FIDEL	DATE
R&QA	DATE
SAFETY	DATE
SUPERVISOR TONY WONG	DATE
	DATE

REGISTERED PROFESSIONAL ENGINEER
TYE HAVEY
No. C65748
Exp. 9/30/19
CIVIL
STATE OF CALIFORNIA
4/26/2018

WRIGHT engineers

Ames Research Center
Moffett Field, California

N206A ROOF ACCESS STAIRS
GENERAL

DEMOLITION PLAN AND ROOF PLAN

SIZE	CAGE CODE	DWG NO.	REV
D	25307	A 206A–1800–G002	
SCALE AS NOTED		INDEX	SHEET 2 OF 5

FILE NAME: G002–172043–G.DWG
DATE: 04.26.2018

WRIGHT PROJECT #: 172043
NARC JOB #:

Ver: 02.02.18

GENERAL STRUCTURAL NOTES

A. GENERAL REQUIREMENTS

1. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE STRUCTURAL ENGINEERS IN THIS OR SIMILAR LOCALITIES. THE WORK DEPICTED SHALL BE PERFORMED BY SUBCONTRACTOR AND/OR WORKMEN WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
2. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, LAGGING, SHORING, BRACING, FORM-WORK, ETC. AS REQUIRED FOR THE PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. CONSTRUCTION MATERIALS SHALL BE UNIFORMLY SPREAD OUT SUCH THAT DESIGN LIVE LOAD PER SQUARE FOOT AS NOTED HEREIN IS NOT EXCEEDED.
3. DESIGN OF ITEMS NOT PART OF THE PRIMARY STRUCTURAL SYSTEM (SUCH AS STAIRS, RAILINGS, NON-STRUCTURAL WALLS) AND PREFABRICATED STRUCTURAL ITEMS (SUCH AS FLOOR, ROOF TRUSSES) SHALL BE PROVIDED BY OTHERS UNLESS SPECIFICALLY NOTED ON THESE DRAWINGS. REFER TO SUBMITTALS SECTION FOR ITEMS THAT MUST BE SUBMITTED FOR REVIEW AND FOR SUBMITTAL REQUIREMENTS.
4. SUBCONTRACTORS AND/OR WORKMEN SHALL VERIFY ALL DIMENSIONS, CONDITIONS AND ELEVATIONS WITH ARCH'L. DRAWINGS AND RESOLVE ANY DISCREPANCIES WITH THE ARCHITECT PRIOR TO START OF CONSTRUCTION. SUBCONTRACTOR AND/OR WORKMEN SHALL ESTABLISH AND VERIFY ALL OPENINGS AND INSERTS FOR ARCH'L., MECH., PLUMBING AND ELECTRICAL WITH APPROPRIATE TRADES, DRAWINGS AND SUBCONTRACTORS PRIOR TO CONSTRUCTION.
5. TYPICAL DETAILS AND NOTES SHALL APPLY, THOUGH NOT NECESSARILY INDICATED AT A SPECIFIC LOCATION ON PLANS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT. DETAILS MAY SHOW ONLY ONE SIDE OF CONNECTION OR MAY OMIT INFORMATION FOR CLARITY.
6. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS.
7. ALL INSPECTIONS REQUIRED BY THE BUILDING CODES, LOCAL BUILDING DEPARTMENTS, OR BY THESE PLANS SHALL BE PROVIDED BY AN INDEPENDENT INSPECTION COMPANY OR THE BUILDING DEPARTMENT. SITE VISITS BY THE ENGINEER DO NOT CONSTITUTE AN INSPECTION.

B. BASIS FOR DESIGN

1.	BUILDING CODE:	2016 EDITION OF THE CALIFORNIA BUILDING CODE	
2.	FLOOR LOADS:	DEAD LOAD: 10 PSF	LIVE LOAD: 100 PSF FLOOR 100 PSF STAIR
3.	WIND LOADS:	110 MPH ULTIMATE WIND SPEED EXPOSURE C	COMPONENT AND CLADDING WIND PRESSURE PER ASCE7-10, CHAPTER 30
4.	SEISMIC LOADS:	SITE CLASS D SEISMIC DESIGN CATEGORY D SS = 1.500 S1 = 0.600 SDS = 1.000 SD1 = 0.600	ASCE7-10 CHAPTER 13 SEISMIC DEMANDS ON NON-STRUCTURAL COMPONENTS $h \le 60$ ft
5.	SNOW LOADS:	NONE	

C. STRUCTURAL ALUMINUM

1. STRUCTURAL ALUMINUM MEMBERS, BOLTS, RIVOTS, ETC., SHALL CONFORM TO THE FOLLOWING STANDARDS AND THE MATERIAL PROPERTIES OF THE ALUMINUM ASSOCIATION'S ALUMINUM DESIGN MANUAL U.N.O:

SHAPE:	STANDARD:	ALLOY:
PROFILED EXTRUSION	ASTM B221	6061-T6
OTHER STANDARD SHAPES	ASTM B308	6061-T6
BARS	ASTM B221	6061-T6
TUBES	ASTM B241	6061-T6
BOLTS	ASTM F593	STAINLESS STEEL (300 SERIES)
NUTS	ASTM F594	STAINLESS STEEL (300 SERIES)
RIVETS	ASTM B316	6061-T6

2. CROSS-SECTIONAL DIMENSIONS OF STRUCTURAL ALUMINUM SHALL NOT VARY BY MORE THAN THE TOLERANCES GIVEN IN THE ALUMINUM ASSOCIATION'S ALUMINUM STANDARDS AND DATA.
3. ALL STRUCTURAL AND MISC. ALUMINUM SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE ALUMINUM DESIGN MANUAL.
4. ALL WELDING OF STRUCTURAL ALUMINUM SHALL CONFORM TO AWS D1.2.
5. WELDING SHALL BE PERFORMED BY WELDERS HOLDING VALID CERTIFICATES AND HAVING CURRENT EXPERIENCE IN THE TYPE OF WELD SHOWN ON THE DRAWINGS. CONTRACTOR MAY SHOP WELD OR FIELD WELD AT HIS DISCRETION. ALL COMPLETE JOINT PENETRATION (CJP) WELDS SHALL BE TESTED AND CERTIFIED BY AN INDEPENDENT TESTING LABORATORY.
6. ALL WELDING SHALL USE 5356 GRADE FILLER ALLOY PER THE ALUMINUM DESIGN MANUAL TABLE 7.1-1 AND SHALL MEET AWS A5.10 WITH A MIN. TENSILE STRENGTH OF 35 KSI U.N.O.
7. WELDING SHALL BE PERFORMED IN ACCORDANCE WITH A WELDING PROCEDURE SPECIFICATION (WPS) AS REQUIRED IN AWS D1.2. THE WPS VARIABLES SHALL BE WITHIN THE PARAMETERS ESTABLISHED BY THE FILLER METAL MANUFACTURER. THE WPS SHALL BE SUBMITTED TO THE OWNER'S TESTING AGENCY FOR REVIEW PRIOR TO FABRICATION AND ERECTION. COPIES OF THE WPS SHALL BE ON SITE AND AVAILABLE TO ALL WELDERS AND THE SPECIAL INSPECTOR.
8. WELD LENGTHS CALLED OUT ON PLANS OR DETAILS ARE MINIMUM NET EFFECTIVE LENGTHS U.N.O.
9. ALL BOLTS SHALL BE INSTALLED AS BEARING-TYPE CONNECTIONS WITH THREADS EXCLUDED FROM SHEAR PLANE U.N.O. THE NOMINAL DIAMETER OF HOLES FOR BOLTS SHALL NOT BE MORE THAN 1/16" GREATER THAN THE NOMINAL DIAMETER OF THE BOLT. THE NOMINAL WIDTH OF SLOTS FOR BOLTS SHALL NOT BE MORE THAN 1/16" GREATER THAN THE NOMINAL DIAMETER OF THE BOLT. THE NOMINAL LENGTH OF SLOTS SHALL BE LESS THAN 2.5 TIMES THE NOMINAL BOLT DIAMETER.

D. STRUCTURAL STEEL

1. STRUCTURAL STEEL MEMBERS SHALL CONFORM TO THE FOLLOWING STANDARDS AND MATERIAL PROPERTIES U.N.O:

SHAPE:	STANDARD:	Fy:
ROLLED WIDE FLANGE SECTIONS	ASTM A992	50 KSI
OTHER STANDARD STEEL SHAPES AND ROLLED SECTIONS	ASTM A36	36 KSI
BARS AND PLATES	ASTM A36	36 KSI
	OR	
	ASTM A572, GRADE 50 (WHERE NOTED)	50 KSI
PIPES	ASTM A53, GRADE B	35 KSI
HSS (RECT.)	ASTM A500, GRADE B OR ASTM A1085	46 KSI (MIN.)
HSS (ROUND)	ASTM A500, GRADE B OR ASTM A1085	42 KSI (MIN.)

2. ALL STRUCTURAL AND MISC. STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH AISC 303 AND SHALL BE COMPLETED BY AN "APPROVED STEEL FABRICATOR." SHOP DRAWINGS AND ERECTION DRAWINGS SHALL INCLUDE ALL ITEMS AS REQUIRED BY AISC 360, SECTION M1.

E. STRUCTURAL STEEL WELDING

1. ALL WELDING OF STRUCTURAL STEEL SHALL CONFORM TO AISC 360, SECTION J2 AND FOLLOW THE PREQUALIFIED JOINT DETAILS INCLUDED THEREIN. WELDING OF JOINTS THAT INCLUDE REINFORCING STEEL SHALL CONFORM TO AWS D1.4.
2. WELDING SHALL BE PERFORMED BY WELDERS HOLDING VALID CERTIFICATES AND HAVING CURRENT EXPERIENCE IN THE TYPE OF WELD SHOWN ON THE DRAWINGS. CONTRACTOR MAY SHOP WELD OR FIELD WELD AT HIS DISCRETION. ALL COMPLETE-JOINT-PENETRATION (CJP) WELDS SHALL BE TESTED AND CERTIFIED BY AN INDEPENDENT TESTING LABORATORY.
3. ALL WELDING SHALL USE PREQUALIFIED MATCHING FILLER METALS PER AWS D1.1, TABLE 3.1, WITH A MIN. TENSILE STRENGTH OF 70 KSI U.N.O. WELDS BETWEEN REINFORCING BARS SHALL USE PREQUALIFIED MATCHING FILLER METALS PER AWS D1.4, TABLE 5.1, WITH A MIN. TENSILE STRENGTH OF 90 KSI U.N.O. (MIN. TENSILE STRENGTHS FOR FILLER METALS USED IN WELDS BETWEEN REINFORCING BARS AND STRUCTURAL STEEL MAY BE 70 KSI).
4. WELDING SHALL BE PERFORMED IN ACCORDANCE WITH A WELDING PROCEDURE SPECIFICATION (WPS) AS REQUIRED IN AWS D1.1. THE WPS VARIABLES SHALL BE WITHIN THE PARAMETERS ESTABLISHED BY THE FILLER METAL MANUFACTURER. THE WPS SHALL BE SUBMITTED TO THE OWNER'S TESTING AGENCY FOR REVIEW PRIOR TO FABRICATION AND ERECTION. COPIES OF THE WPS SHALL BE ON SITE AND AVAILABLE TO ALL WELDERS AND THE SPECIAL INSPECTOR.
5. WELD LENGTHS CALLED OUT ON PLANS OR DETAILS ARE MINIMUM NET EFFECTIVE LENGTHS U.N.O.
6. ALL MISC. FILLET WELDS NOT NOTED, INCLUDING THOSE FOR STIFFENERS, MISC. PLATES, ETC., SHALL BE PER AISC 360, TABLE J2.4.
7. WELDS SHALL BE SEQUENCED TO MINIMIZE RESIDUAL STRESS DUE TO WELD SHRINKAGE.

F. STRUCTURAL STEEL BOLTS, ANCHORS, HEADED STUDS

1. WHERE A SPECIFIC EXPANSION ANCHOR, SCREW ANCHOR, OR EPOXY PRODUCT IS SPECIFIED ON PLANS OR DETAILS, ONLY THE SPECIFIED PRODUCT SHALL BE USED AND NO SUBSTITUTIONS ARE ALLOWED. WHERE AN EXPANSION ANCHOR, SCREW ANCHOR, OR EPOXY PRODUCT IS SPECIFIED ON PLANS OR DETAILS BUT A SPECIFIC PRODUCT IS NOT STATED, ANY OF THE RESPECTIVE PRODUCTS LISTED BELOW ARE ACCEPTABLE. THE USE OF PRODUCTS NOT INCLUDED BELOW IS NOT ALLOWED. ALL PRODUCTS SHALL BE INSTALLED WITH SPECIAL INSPECTION.
2. BOLTS SHALL CONFORM TO ASTM A325/F1852, NUTS SHALL CONFORM TO ASTM A563, AND WASHERS SHALL CONFORM TO ASTM F436
3. ALL BOLTS SHALL BE INSTALLED AS SNUG-TIGHTENED JOINTS WITH THREADS EXCLUDED FROM SHEAR PLANE (TYPE "X" CONNECTION) U.N.O. HIGH-STRENGTH BOLT ASSEMBLIES SHALL BE IN ACCORDANCE WITH THE RCSC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS" AND SHALL BE SNUG TIGHTENED USING ANY AISC APPROVED METHOD U.N.O. ALL BOLTS IN SLOTTED OR OVERSIZED HOLES AND ALL HIGH-STRENGTH BOLTS SHALL BE INSTALLED WITH HARDENED WASHERS.

1.1. EXPANSION ANCHORS IN CONCRETE SHALL BE HILTI KWIK BOLT TZ (ICC ESR-1917), SIMPSON STRONG-BOLT 2 (ICC ESR-3037), OR DEWALT/POWERS POWER-STUD+ SD2 (ICC ESR-2502) U.N.O. EXPANSION ANCHORS IN MASONRY SHALL BE SIMPSON STRONG-BOLT 2 (IAPMO ER-0240), HILTI KWIK BOLT 3 (ICC ESR-1385) OR DEWALT/POWERS POWER-STUD+ SD1 (ICC ESR-2966). EXPANSION ANCHORS SHALL BE INSTALLED WITH SPECIAL INSPECTION.

1.2. SCREW ANCHORS SHALL BE DEWALT/POWERS WEDGE-BOLT+ PER ICC ESR-1678 FOR MASONRY AND ICC ESR-2526 FOR CONCRETE, SIMPSON TITEN HD PER ICC ESR-1056 FOR MASONRY AND ICC ESR-2713 FOR CONCRETE, HILTI KWIK HUS-EZ PER ICC ESR-3056 FOR MASONRY AND ICC ESR-3027 FOR CONCRETE. SCREW ANCHORS SHALL BE INSTALLED WITH SPECIAL INSPECTION.

1.3. EPOXY ANCHORS IN CONCRETE (ALL-THREAD, REBAR, ETC.) SHALL USE HILTI HIT-RE 500 V3 (ICC ESR-3814), SIMPSON SET-XP (ICC ESR-2508), OR DEWALT/POWERS PURE110+ (ICC ESR-3298) U.N.O. ALL EPOXY ANCHORS IN MASONRY (ALL-THREAD, REBAR, ETC.) SHALL USE SIMPSON SET-XP (IAPMO ER-0265), HILTI HIT-HY 200 (ICC ESR-3963) OR DEWALT/POWERS AC100+ GOLD (ICC ESR-3200) U.N.O. EPOXY ANCHORS SHALL BE INSTALLED WITH SPECIAL INSPECTION.

G. SPECIAL INSPECTION

1. IN ADDITION TO STANDARD INSPECTIONS BY THE BUILDING OFFICIAL REQUIRED PER IBC SECTION 110, THE OWNER SHALL EMPLOY ONE OR MORE SPECIAL INSPECTORS WHO SHALL PROVIDE INSPECTIONS DURING CONSTRUCTION FOR THE TYPES OF WORK LISTED IN THIS SECTION.
2. THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.
3. THE SPECIAL INSPECTOR SHALL INSPECT THE WORK ASSIGNED FOR CONFORMANCE WITH THE APPROVED CONTRACT DRAWINGS AND SPEC'S. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, THE ENGINEER OF RECORD, AND OTHER DESIGNATED PERSONS. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, THEN, IF UNCORRECTED, TO THE ENGINEER AND THE BUILDING OFFICIAL. THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT STATING WHETHER THE WORK REQUIRING SPECIAL INSPECTION WAS, TO THE BEST OF THE INSPECTOR'S KNOWLEDGE, IN CONFORMANCE WITH THE APPROVED PLANS AND SPEC'S AND THE APPLICABLE CODE PROVISIONS.
4. INSPECTORS SHALL INSPECT FROM AN APPROVED SET OF CONTRACT DRAWINGS. SHOP DRAWINGS SHALL NOT BE USED IN LIEU OF THE APPROVED CONTRACT DRAWINGS FOR INSPECTION PURPOSES.
5. TYPES OF WORK TO BE INSPECTED BY THE SPECIAL INSPECTOR ARE AS FOLLOWS:

5.1. DURING ALL EPOXY ANCHORING OPERATIONS FOR BOLTS, REBAR, THREADED ROD, ETC., INCLUDING VERIFICATION OF BOLT OR BAR MATERIALS, HOLE DEPTH AND DIA., HOLE CLEANOUT, EPOXY MIXING AND PLACEMENT PROCEDURES, AND EMBEDMENT DEPTH IN ACCORDANCE WITH THE CONTRACT DRAWINGS AND MFR.'S SPEC.'S AND RECOMMENDATIONS.

5.2. STEEL CONSTRUCTION AND WELDING PER IBC SECTION 1705.2.1

5.3. STEEL FABRICATORS PER IBC 1704.2.5.
EXCEPTION: FABRICATOR APPROVAL: SPECIAL INSPECTION NOT REQUIRED IF FABRICATOR IS REGISTERED AND APPROVED TO PERFORM THE WORK BY AN APPROVED AGENCY. FABRICATOR SHALL SUBMIT A CERTIFICATE OF COMPLIANCE TO THE OWNER FOR SUBMITTAL TO THE BUILDING OFFICIAL PER IBC 1704.5 AFTER COMPLETION OF THE WORK.

6. CERTIFICATE OF APPROVAL REGARDING MATERIALS AND INSPECTION OF PREFABRICATED ITEMS SHALL BE PROVIDED IN ACCORDANCE WITH IBC SECTION 1704.

H. SUBMITTALS

1. PREFABRICATED COMPONENTS, SPECIALTY ITEMS, OR DESIGN-BUILD ELEMENTS NOTED ON THE STRUCTURAL DRAWINGS, BUT WHICH REQUIRE THE MFR. OR SUPPLIER TO PROVIDE THE DESIGN, MAY BE SUBMITTED TO THE ARCHITECT AND/OR ENGINEER FOR REVIEW AS A DEFERRED SUBMITTAL. DEFERRED SUBMITTALS REQ'D. BY THE STRUCTURAL ENGINEER OF RECORD SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:

   STAIRS

2. DEFERRED SUBMITTALS SHALL INCLUDE CALCULATIONS AND DRAWINGS PREPARED AND STAMPED BY AN APPROPRIATELY LICENSED ENGINEER (SPECIALTY ENGINEER) SHOWING LOCATION AND MAGNITUDE OF LOADS, CONFIGURATION AND SIZE OF MEMBERS, AND COMPATIBILITY OF SUBMITTAL ITEM WITH THE PRIMARY STRUCTURAL SYSTEM.
3. THE PURPOSE OF THE STRUCTURAL ENGINEER'S REVIEW OF DEFERRED SUBMITTALS SHALL BE LIMITED TO DETERMINING THAT THE DRAWINGS AND CALCULATIONS HAVE BEEN PROPERLY SEALED, THAT THE LOAD CRITERIA IS IN GENERAL CONFORMANCE WITH THE CONTRACT DOCUMENTS AND WITH THE REFERENCED BUILDING CODE, THAT CONNECTIONS TO THE PRIMARY STRUCTURE ARE COMPATIBLE WITH THE PRIMARY DESIGN, AND THAT THE PRIMARY STRUCTURE IS CAPABLE OF SUPPORTING THE IMPOSED LOADS.
4. THE STRUCTURAL ENGINEER WILL RELY UPON THE SPECIALTY ENGINEER'S SEAL AS CERTIFICATION THAT THE ITEMS DESIGNED BY THE SPECIALTY ENGINEER COMPLY WITH THE CRITERIA SET FORTH IN THE CONSTRUCTION DOCUMENTS AND APPLICABLE CODES AND STANDARDS. THE STRUCTURAL ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ADEQUACY OF DESIGNS PROVIDED BY OTHERS.
5. FOR ALL SUBMITTALS, ANY CORRECTIONS NOTED WILL BE MARKED ON ONE (1) COPY SET ONLY AND RETURNED. ADDITIONAL COPIES OF ANY SUBMITTAL WILL BE RETURNED UNMARKED. CONTRACTOR SHALL BE RESPONSIBLE FOR REPRODUCING ENGINEER'S CORRECTIONS ON ADDITIONAL COPIES REQ'D. ONE COPY SET MAY BE RETAINED FOR THE ENGINEER'S RECORDS. ALLOW FIVE (5) TO TEN (10) WORKING DAYS FOR THE ENGINEER'S REVIEW.
6. REFER TO APPLICABLE G.S.N. SECTIONS FOR FURTHER REQUIREMENTS SPECIFIC TO INDIVIDUAL SUBMITTALS.
7. DEFERRED SUBMITTALS SHALL BE FORWARDED TO THE BUILDING OFFICIAL / CITY INSPECTOR FOR APPROVAL AFTER RECEIVING APPROVAL FROM THE STRUCTURAL ENGINEER

STANDARD ABBREVIATIONS

A.B.	ANCHOR BOLT	HORIZ.	HORIZONTAL
ACI	AMERICAN CONCRETE INSTITUTE	IBC	INTERNATIONAL BUILDING CODE
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	ICC	INTERNATIONAL CODE COUNCIL
		INFO.	INFORMATION
AISI	AMERICAN IRON AND STEEL INSTITUTE	JT.	JOINT
		K	KIP (1,000 LBS)
ALT.	ALTERNATE	KSI	KIPS PER SQUARE INCH
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	LSL	LAMINATED STRAND LUMBER
		LVL	LAMINATED VENEER LUMBER
A.R.	ANCHOR ROD	MFR.	MANUFACTURER
ARCH'L.	ARCHITECTURAL	MAX.	MAXIMUM
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	MECH.	MECHANICAL
		MIN.	MINIMUM
AWS	AMERICAN WELDING SOCIETY	MISC.	MISCELLANEOUS
B.F.	BOUNDARY FASTENERS	N.T.S.	NOT TO SCALE
BRG.	BEARING	o.c.	ON CENTER
CLR.	CLEAR DIMENSION TO FACE OF REBAR	OPP.	OPPOSITE
		PL.	PLATE
CONT.	CONTINUOUS	PLF	POUNDS PER LINEAR FOOT
CRSI	CONCRETE REINFORCING STEEL INSTITUTE	PLYWD.	PLYWOOD
		PSF	POUNDS PER SQUARE FOOT
DIA.	DIAMETER	PSI	POUNDS PER SQUARE INCH
DIAG.	DIAGONAL	PSL	PARALLEL STRAND LUMBER
DWG.	DRAWING	REQ'D.	REQUIRED
E.F.	EACH FACE	SIM.	SIMILAR
EL.	ELEVATION	SPEC.	SPECIFICATION
ELECT.	ELECTRICAL	STD.	STANDARD
E.O.R.	ENGINEER OF RECORD	SW	SHEAR WALL
EQ.	EQUAL	T & B	TOP AND BOTTOM
E.W.	EACH WAY	T & G	TONGUE AND GROOVE
F.F.	FINISH FLOOR	TYP.	TYPICAL
FLR.	FLOOR	U.N.O.	UNLESS NOTED OTHERWISE
FT.	FOOT	VERT.	VERTICAL
FTG.	FOOTING	w/	WITH
GLB	GLULAM BEAM	w/o	WITHOUT
G.S.N.	GENERAL STRUCTURAL NOTES	WT.	WEIGHT
G.T.	GIRDER TRUSS		

APPROVED FOR CONSTRUCTION
MOFFETT FIELD PERMIT BOARD

CHIEF BUILDING OFFICIAL
PERMIT NO. 18P013

ZONE	REV	DESCRIPTION	DRAWN	DATE	APPRVD

REVISIONS

DRAWN P.KRIZAN	DATE
DESIGNED P.KRIZAN	DATE
CHECKED T.HAVEY	DATE
PROJMGR P.KRIZAN	DATE
REQUESTER JOHN FIDEL	DATE
R&QA	DATE
SAFETY	DATE
SUPERVISOR TONY WONG	DATE
	DATE

Ames Research Center
Moffett Field, California

N206A ROOF ACCESS STAIRS
STRUCTURAL

GENERAL STRUCTURAL NOTES

SIZE D | CAGE CODE 25307 | A 206A–1800–S001 | REV
SCALE NONE | INDEX | SHEET 3 OF 5

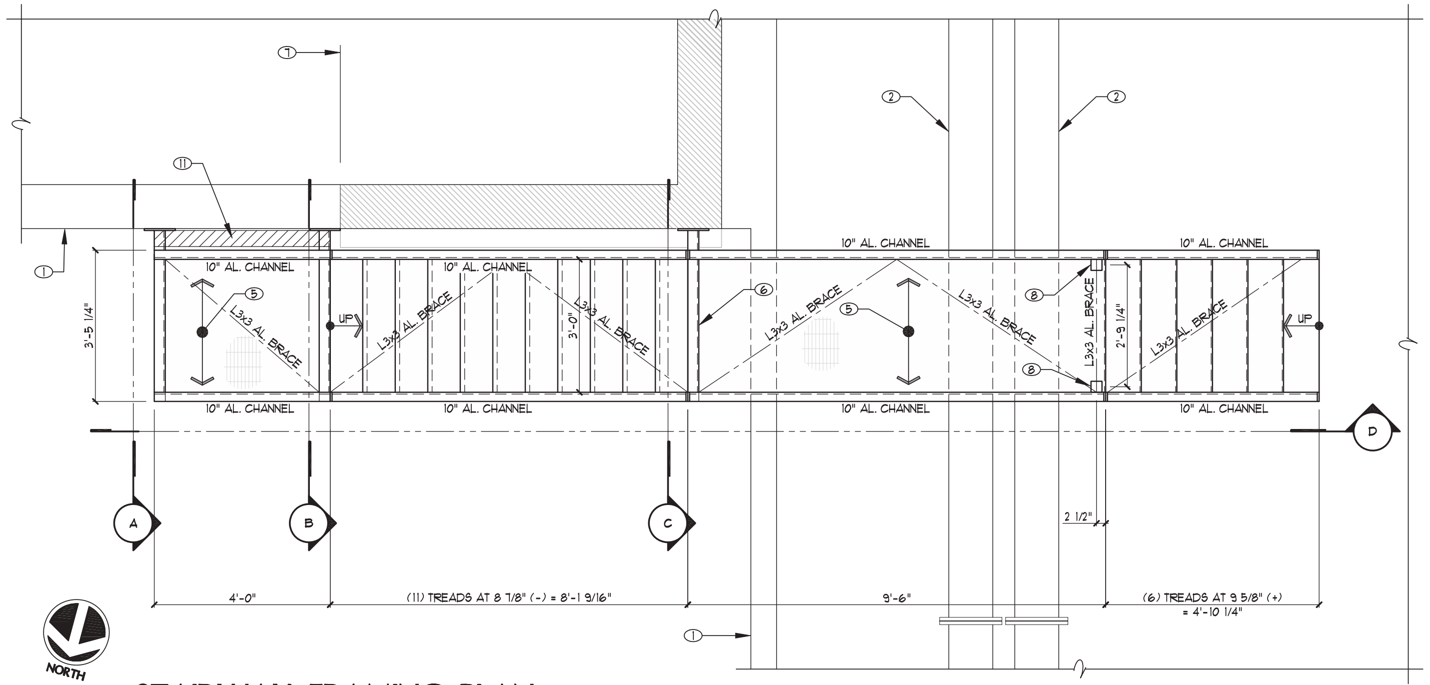
FILE NAME: S001–172043–G.DWG | DATE: 04.26.2018

REGISTERED PROFESSIONAL ENGINEER — TYE HAVEY — No. C65748 — Exp. 9/30/19 — CIVIL — STATE OF CALIFORNIA
4/26/2018

WRIGHT engineers
7400 West Detroit Street Suite 170
Chandler, AZ 85226
480.483.6111 wrightengineers.com

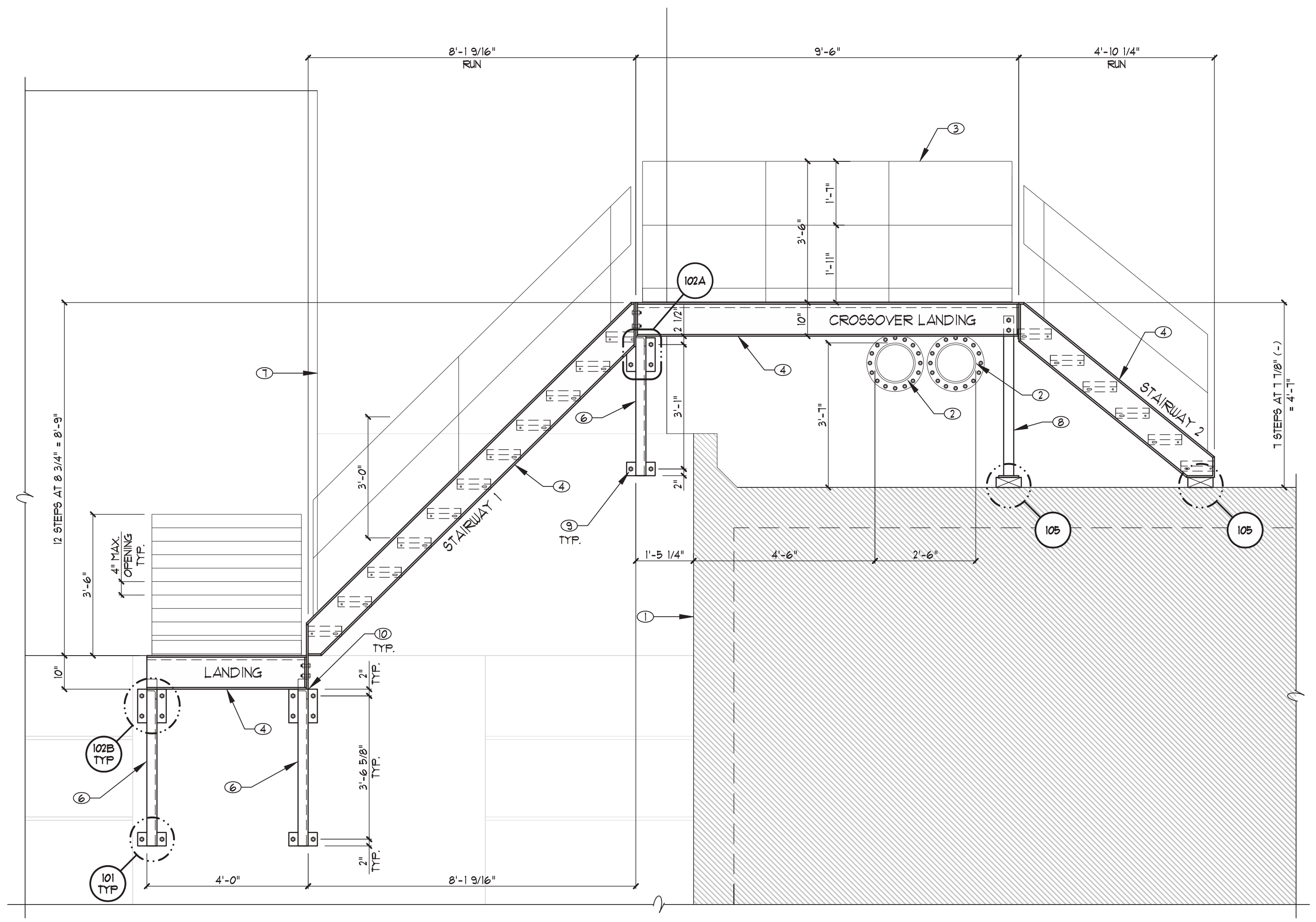
WRIGHT PROJECT #: 172043
NARC JOB #:

Ver: 02.02.18



STAIRWAY FRAMING PLAN

SCALE: 1/2" = 1'-0"



SECTION D

SCALE: 1/2" = 1'-0"

FRAMING NOTES

A. ALL ALUMINUM SHALL BE ASTM B308 ALLOY 6061-T6. ALL STEEL SHALL BE ASTM A36

B. ALL 10" ALUMINUM CHANNEL SHALL BE 10" TALL x2.6" WIDE x0.24" WEB THICKNESS

C. ALL L3x3 ALUMINUM BRACING SHALL BE L3x3x1/4

D. SHOP DRAWINGS FOR THE FOLLOWING ITEMS SHALL BE PROVIDED BY FS INDUSTRIES FOR REVIEW:

1. 48" x 44" ALUMINUM LANDING
2. 36" WIDE ALUMINUM STAIRWAY 1
3. 36" WIDE ALUMINUM CROSSOVER LANDING
4. 36" WIDE ALUMINUM STAIRWAY 2
5. 3"x3"x3/16" ALUMINUM TUBE POSTS
6. ASSOCIATED HANDRAIL, GUARDRAIL, AND 1/4" x4" KICKPLATES AS REQUIRED
7. STEEL L3x3x1/4 TRIANGULAR BRACKETS
8. STEEL L5x5x1/4 STEEL GAP FILLER AT LANDING INTERFACE

E. GUARDRAILS SHALL REMAIN OPEN. NO SCREENS OR NETTING SHALL BE AFFIXED TO THE GUARDRAILS

F. ALL STAIRS AND LANDINGS SHALL BE DESIGNED FOR 100 PSF LIVE LOAD

KEY NOTES

(1) FACE OF EXISTING CONCRETE BUILDING

(2) EXISTING PIPING

(3) GUARDRAIL

(4) PREFABRICATED ALUMINUM STAIRWAY AND LANDING

(5) I BAR ALUMINUM GRATING

(6) L3x3x1/4 A36 STEEL BRACING. REFER TO DETAIL 103

(7) EDGE OF EXISTING OPENING

(8) 3"x3"x3/16" ALUMINUM POST

(9) 5/8" DIA. x 10" LONG ALL-THREAD ROD SET IN DRILLED HOLE w/ SIMPSON SET-XP EPOXY. 8" EMBEDMENT.

(10) PROVIDE 1/8" THICK EPDM WASHERS AND BEARING PADS (w/ DUROMETER HARDNESS RANGE OF 50-70) AT ALL LOCATIONS WHERE ALUMINUM BEARS ON STEEL FRAME

(11) L5x5x1/4 STEEL ANGLE ANCHORED TO WALL w/ 5/8" DIA. x 6" LONG ALL-THREAD RODS SET IN DRILLED HOLES w/ SIMPSON SET-XP EPOXY. 5" EMBEDMENT. REFER TO DETAIL 104.

DWG NO. A206A-1800-S002 | SH. | REV

PARTS LIST

PART	DESCRIPTION	MATERIAL	SUPPLIER	REF. DRAWING NO.
01	STAIRS, LANDINGS, GUARDRAILS	ASTM B308 ALLOY T6061-T6 ALUMINUM	FS INDUSTRIES	F6294
02	TRIANGULAR SUPPORT ANGLES	ASTM A36 STEEL	FS INDUSTRIES	F6294
03	LANDING GAP FILLER	ASTM A36 STEEL	FS INDUSTRIES	F6294
04	5/8" DIA. ANCHOR ROD	ASTM F1554 GRADE 36 STEEL	CONTRACTOR	A206A-1800-S002
05	BEARING PADS AND WASHERS	EPDM	CONTRACTOR	A206A-1800-S003
06	WOOD BEARING BLOCK	DOUG-FIR No. 2	CONTRACTOR	A206A-1800-S003

APPROVED FOR CONSTRUCTION
MOFFETT FIELD PERMIT BOARD

CHIEF BUILDING OFFICIAL
PERMIT NO. 18P013

REGISTERED PROFESSIONAL ENGINEER
TYE HAVEY
No. C65748
Exp. 9/30/19
CIVIL
STATE OF CALIFORNIA
4/26/2018

WRIGHT engineers

ZONE	REV	DESCRIPTION	DRAWN	DATE	APPRVD

REVISIONS

DRAWN P.KRIZAN	DATE
DESIGNED P.KRIZAN	DATE
CHECKED T.HAVEY	DATE
PROJMGR P.KRIZAN	DATE
REQUESTER JOHN FIDEL	DATE
R&QA	DATE
SAFETY	DATE
SUPERVISOR TONY WONG	DATE
	DATE

Ames Research Center
Moffett Field, California

N206A ROOF ACCESS STAIRS
STRUCTURAL

STAIRWAY FRAMING PLAN AND ELEVATION

SIZE D | CAGE CODE 25307 | A206A-1800-S002 | REV

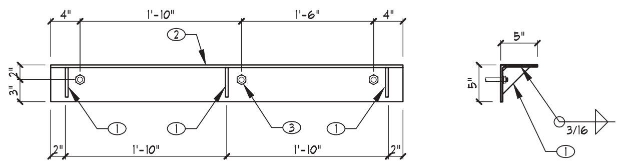
SCALE AS NOTED | INDEX | SHEET 4 OF 5

FILE NAME: S002-172043-D.DWG | DATE: 04.26.2018

WRIGHT PROJECT #: 172043
NARC JOB #:

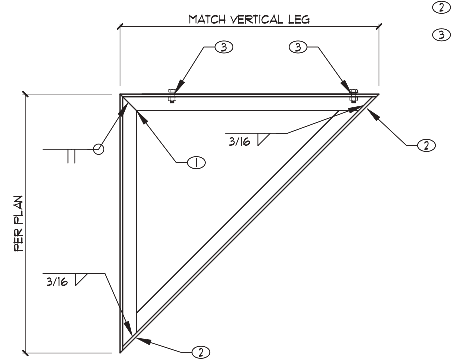
Ver: 02.02.18

DWG NO. A206A-1800-S003 | SH. | REV



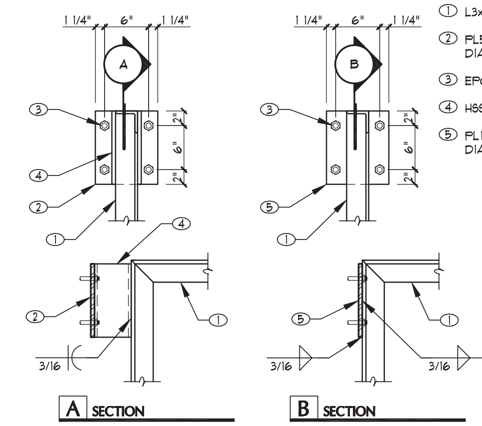
1. PL1/4 x4" x0'-4" GUSSET
2. L5x5x1/4 x4'-0" w/ (3) 11/16" DIA. HOLES FOR ANCHORS
3. EPOXY ANCHORS PER PLAN

104 PLATFORM INFILL
104-172043 NO SCALE



1. MITER CORNER
2. COPE LEG
3. 11/16" BOLT HOLE

103 TYPICAL BRACE
103-172043 NO SCALE

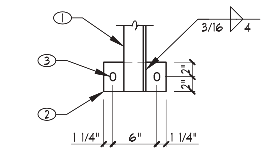


A SECTION

B SECTION

1. L3x3x1/4 BRACE
2. PL5/8 x10" x0'-8 1/2" w/ (4) 11/16" DIA. HOLES FOR ANCHORS
3. EPOXY ANCHORS PER PLAN
4. HSS5x5x1/4 x10" LONG
5. PL1/2 x10" x0'-8 1/2" w/ (4) 11/16" DIA. HOLES FOR ANCHORS

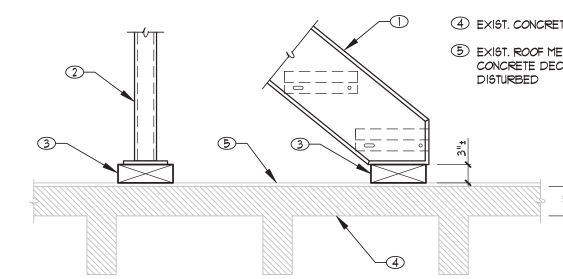
102 ANCHOR PLATE AT BRACE
102-172043 NO SCALE



1. L3x3x1/4 BRACE
2. PL1/2 x4" x0'-8 1/2" w/ (2) 11/16" x 1" TALL SLOTS FOR ANCHORS
3. EPOXY ANCHORS PER PLAN CENTERED IN VERTICAL SLOTS

101 ANCHOR PLATE AT BRACE
101-172043 NO SCALE

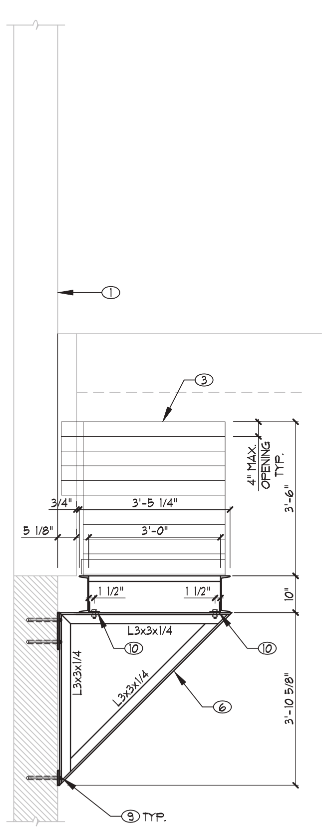
1. ALUMINUM STAIR STRINGER
2. ALUMINUM POST w/ 6" SQUARE BASE PLATE
3. 12" LONG x 7 1/2" WIDE PRESERVATIVE TREATED WOOD BLOCK UNDER BEARING LOCATIONS. RIP BLOCK TO REQUIRED HEIGHT
4. EXIST. CONCRETE ROOF DECK
5. EXIST. ROOF MEMBRANE OVER CONCRETE DECK SHALL NOT BE DISTURBED



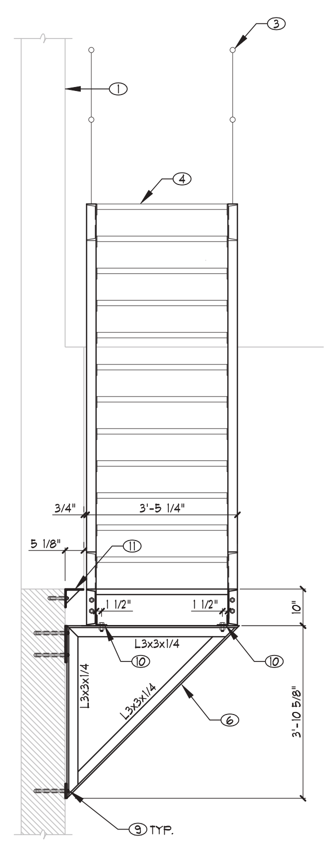
105 STAIR SUPPORT AT EXISTING ROOF
105-172043 NO SCALE

KEY NOTES

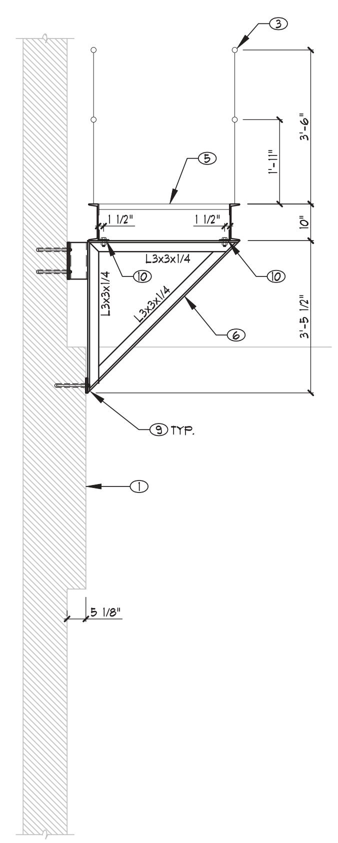
1. FACE OF EXISTING CONCRETE BUILDING
2. EXISTING PIPING
3. GUARDRAIL
4. PREFABRICATED ALUMINUM STAIRWAY AND LANDING
5. I BAR ALUMINUM GRATING
6. L3x3x1/4 A36 STEEL BRACING. REFER TO DETAIL 103
7. EDGE OF EXISTING OPENING
8. 3"x3"x3/16" ALUMINUM POST
9. 5/8" DIA. x 10" LONG ALL-THREAD ROD SET IN DRILLED HOLE w/ SIMPSON SET-XP EPOXY. 8" EMBEDMENT.
10. PROVIDE 1/8" THICK EPDM WASHERS AND BEARING PADS (w/ DUROMETER HARDNESS RANGE OF 50-70) AT ALL LOCATIONS WHERE ALUMINUM BEARS ON STEEL FRAME
11. L5x5x1/4 STEEL ANGLE ANCHORED TO WALL w/ 5/8" DIA. x 6" LONG ALL-THREAD RODS SET IN DRILLED HOLES w/ SIMPSON SET-XP EPOXY. 5" EMBEDMENT. REFER TO DETAIL 104.



SECTION A
SCALE: 1/2" = 1'-0"



SECTION B
SCALE: 1/2" = 1'-0"



SECTION C
SCALE: 1/2" = 1'-0"

APPROVED FOR CONSTRUCTION
MOFFETT FIELD PERMIT BOARD

CHIEF BUILDING OFFICIAL
PERMIT NO. 18P013

ZONE	REV	DESCRIPTION	DRAWN	DATE	APPRVD

REVISIONS

WRIGHT engineers

TYE HAVEY No. C65748 Exp. 9/30/19 CIVIL REGISTERED PROFESSIONAL ENGINEER STATE OF CALIFORNIA
4/26/2018

DRAWN P.KRIZAN	DATE
DESIGNED P.KRIZAN	DATE
CHECKED T.HAVEY	DATE
PROJMGR P.KRIZAN	DATE
REQUESTER JOHN FIDEL	DATE
R&QA	DATE
SAFETY	DATE
SUPERVISOR TONY WONG	DATE
	DATE

Ames Research Center
Moffett Field, California

N206A ROOF ACCESS STAIRS
STRUCTURAL

STAIRWAY SECTIONS AND DETAILS

SIZE D | CAGE CODE 25307 | A 206A-1800-S003 | REV
SCALE AS NOTED | INDEX | SHEET 5 OF 5

FILE NAME: S003-172043-D.DWG | DATE: 04.26.2018

WRIGHT PROJECT #: 172043
NARC JOB #:

Ver: 02.02.18

ATTACHMENT C

DPR 523 FORMS

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #_____
HRI #_____
Trinomial_____
NRHP Status Code_____
Other Listings_____
Review Code_____ Reviewer_____ Date_____

 Resource name(s) or number(assigned by recorder) N-206

P1. Other Identifier: 12' Pressure Wind tunnel, N.A.C.A. 12' Research Tunnel
***P2. Location:** ☒Not for Publication ☐Unrestricted ***a. County** Santa Clara
***b. USGS 7.5' Quad** San Francisco North, Calif. **Date:** 1995
***c. Address** 355 King Road **City** Moffett Field **Zip** 94035
***e. Other Locational Data:**

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries.)

Building N-206 is the 12-ft Pressurized Wind Tunnel, re-construction completed in 1995 of the original 1946 wind tunnel. It is located on King Street, just east of Building N-206A. Building N-206 can be broken down into three distinct parts. The front of the building faces King Street and serves as the main entrance to the building. It has a concrete foundation, flat roof and minimal architectural detail. The first story is made of seven bays separated by concrete piers. In between the bays are rectangular, synthetic panels that span the length of the bays. The center bay serves as the main entry to the building with aluminum glazed doors and a massive, simple canopy marking the entrance. The second story steps slightly in front of the concrete piers, with only the synthetic panels expressed. This story has ribbon windows along the north façade that wrap halfway around the east and west façades. A one-story, rectangular, concrete addition is located on the east side. This addition has no windows and only a single pair of flush, metal doors with a concrete ramp leading up to the doors. The back of the the building is steel framed and clad in corrugated metal. It has a metal, gabled roof and a ribbon of windows at the third story that wrap all the way around the building. Additional louvered openings are located along the east façade. Also located on the east façade is the connection to the wind tunnel. Two metal roll-up doors are located along the west façade with a ribbon of windows in between. An addition on the south side takes the form of a one-story metal shed. This building appears to be in good condition.

***P3b. Resource Attributes:** (list attributes and codes) HP 39 – Other

***P4. Resources Present:** ☒Building ☐Structure ☐Object ☐Site ☐District ☐Element of District ☐Other

P5a. Photo

P5b. Photo: (view and date)
View of north & east façades, (8/04/05)

***P6. Date Constructed/Age and Sources:** 1946

***P7. Owner and Address:**
United States of America as represented by National Aeronautics and Space Administration (NASA)

***P8. Recorded by:**
Page & Turnbull, Inc.
724 Pine Street
San Francisco, CA 94108

***P9. Date Recorded:** 08/04/05

***P10. Survey Type:**
Reconnaissance

***P11. Report Citation:** Architectural Resources Group, *Building Evaluations, NASA Ames Research Center, Moffett Field, California* (July 27, 2001)

***Attachments:** ☒None ☐Location Map ☐Sketch Map ☐Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (list)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

Primary #_____
HRI#_____

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status Code_____

*Resource Name or # N-206

B1. Historic name:
B2. Common name: 12-Fott Pressure Wind Tunnel
B3. Original Use: B4. Present use:

***B5. Architectural Style:**

***B6. Construction History:** (Construction date, alterations, and date of alterations)
1946 – Date of Construction; 1988 – Exterior restoration; 1994 – Complete reconstruction

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:**_____ **Original Location:**_____

***B8. Related Features:**
Other historically significant features include the wind tunnel.

B9a. Architect: National Advisory Committee for Aeromautics (NACA) Engineers b. Builder:

***B10. Significance: Theme** Post-War Science and Space Exploration **Area** NASA Ames Research Center
Period of Significance 1940-1952 **Property Type** Wind Tunnel **Applicable Criteria** 1
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity)

As stated in the previous DPR 523 Form B for Building N-206:
Building N-206 is an active wind tunnel facility and has operated as such since its original construction. Originally built as a pressurized wind tunnel in 1948, Building N-206 was restored in 1988 and completely reconstructed in 1994. During the building's reconstruction, the flow circuit was re-clad, thereby losing the original historic appearance and materials, but retaining its original three-story configuration, massing, and infrastructure. The interior has largely been rebuilt and retains little historic integrity. N-206 is unique as the first pressurized wind tunnel. The wind tunnel was capable of being pressurized to 88 P.S.I.A., which provided the capability for a high Reynolds Number and low turbulence aerodynamic testing. In 1967 it was identified in a nationwide review of American wind tunnels as being a key national resource, one of three to be so designated at Ames. N-206 utilized pressurized air for achieving extended test capabilities as represented by the parameter 'Reynolds Number." While the building's location, setting and association remain intact, the 1994 reconstruction has completely altered the interior and exterior obscuring its original design, materials, workmanship and feeling. N-206 has lost its original integrity.

For additional technical data, see Continuation Sheet.

B11. Additional Resource Attributes: (List attributes and codes) (HP39) – Wind Tunnel

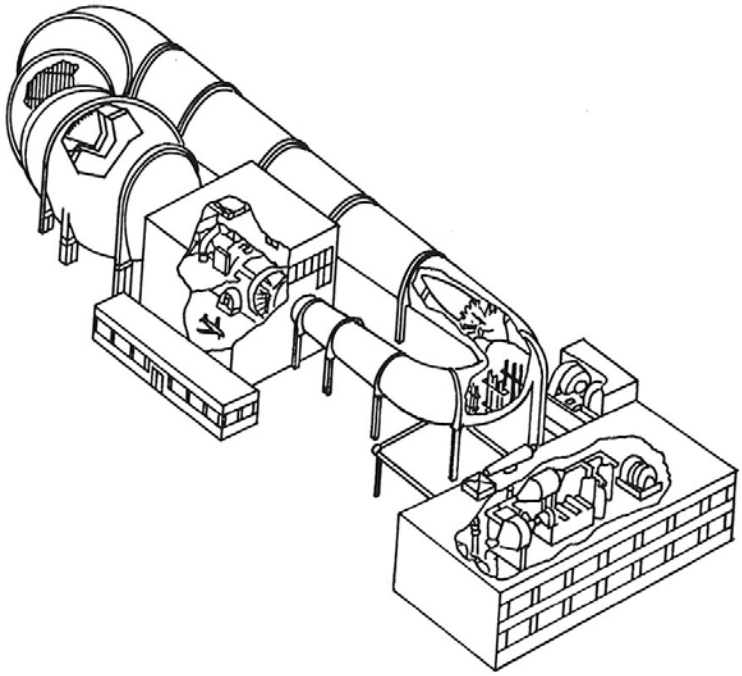
***B12. References:**
- Architectural Resources Group, *Building Evaluations, NASA Ames Research Center, Moffett Field, California*, July 27, 2001
- National Aeronautics and Space Administration, *Technical Facilities Catalog*, Volume 1, publication NHB 8800.5A (1), October 1974.
- Technical Information Division, Ames Research Center, *Ames Research Facilities Summary,* 1974.
- Donald D. Baals and William R. Corliss, *Wind Tunnels of NASA,* NASA SP-440, 1981.
B13. Remarks:

***B14. Evaluator:** Rich Sucre
Page & Turnbull, Inc.
724 Pine Street
San Francisco, CA 94108

***Date of Evaluation: 10/18/2005**

(This space reserved for official comments.)

Sketch Map



DESCRIPTION

The 12-ft pressure wind tunnel is a variable-density, low-turbulence tunnel that operates at subsonic speeds up to ~~slightly less than~~ Mach 1.0. The wind tunnel is powered by a ~~2~~-stage, axial-flow fan driven by electric motors totaling 12,000 hp. Airspeed in the test section is controlled by variation of the rotational speed of the fan. Eight fine-mesh screens in the settling chamber, together with the large contraction ratio of 25 to 1, provide an airstream of exceptionally low turbulence.

CHARACTERISTICS

Mach Number:	0 to ~~0.90~~ 0.60, continuously variable
Reynolds Number, per ft:	~~0 to 9.0~~ x 10^6
Stagnation Pressure, atm:	0.17 to ~~5.0~~ 6.0
Stagnation Temperature:	500° to 625°R; generally above 560°R, depending on power being used
Test-Section Height, ft:	~~11.3~~ 12.0
Test-Section Width, ft:	~~11.3~~ 12.0
Test-Section Length, ft:	~~18.0~~ 28.5
Test-Section Access Hatch, ft:	5.0 wide x 11.0 long, on top of tunnel

There are no facilities for schlieren or shadowgraph flow visualization, but motion pictures of models can be taken by remotely-operated cameras mounted in the balance chamber.

THIS TUNNEL CAN OPERATE AT UP TO 6 ATMOSPHERES OF PRESSURE

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #_____
HRI #_____
Trinomial_____
NRHP Status Code_____
Other Listings_____
Review Code_____ Reviewer_____ Date_____

Page 1 of 2 **Resource name(s) or number**(assigned by recorder) N-206A

P1. Other Identifier: 12' Pressure Wind Tunnel Auxilary Bldg.
***P2. Location:** ☒Not for Publication ☐Unrestricted ***a. County** Santa Clara
***b. USGS 7.5' Quad** San Francisco North, Calif. **Date:** 1995
***c. Address** 345 King Road **City** Moffett Field **Zip** 94035
***e. Other Locational Data**:

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries.)

Building N-206A is located on King Road. It is a 60' x 145', 12,000 sq. ft. building with a concrete foundation, painted concrete walls, and a flat roof. This utilitarian building is connected on the west side to Building N-204A, forming an "L" shape. Building N-206A is simple, with minimal ornamental detail. A simple metal coping caps the building at the top. The building has simple, flat, horizontal concrete bands that run across each façade. These bands give definition to the first and second floors. The building has three over three wood, awning windows at both the first and second floor, sandwiched between the concrete bands. At several window openings, metal louvers take the place of the awning windows. A few of the window openings have been filled in. These windows appear in sets of four on the east and west sides. The windows on the King Street façade appear in pairs. The concrete piers separating the groups of windows have scoring that aligns with the window mullions. The building has no clear main entry. Entry into the buildings is via utilitarian metal flush doors that are located in random locations, including "man-doors" in roll-up doors. Miscellaneous ductwork and mechanical equipment from the adjacent wind tunnel are located along the north façade. Building N-206A has a 33' x 33 ½' addition on the southeast corner. The addition's roofline is higher than that of the original building and has a roll-up door on the second floor, north side. A roll-up door is also located on the west side of the building, at the corner where N-206A joins N-204A. This building appears to be in good condition.

***P3b. Resource Attributes:** (list attributes and codes) HP 39 – Other: Research and Development Building

***P4. Resources Present:** ☒Building ☐Structure ☐Object ☐Site ☐District ☐Element of District ☐Other

P5a. Photo

P5b. Photo: (view and date)
View of front north façade, (8/04/05)

***P6. Date Constructed/Age and Sources:** 1969

***P7. Owner and Address:**
United States of America as represented by National Aeronautics and Space Administration (NASA)

***P8. Recorded by:**
Page & Turnbull, Inc.
724 Pine Street
San Francisco, CA 94108

***P9. Date Recorded:** 08/04/05

***P10. Survey Type:**
Reconnaissance

***P11. Report Citation:** Lori Neff, Department of Parks and Recreation – Historic Resources Inventory "Bldg. N206A, 12 Ft. Pressure Wind Tunnel Auxiliaries," (1995).

***Attachments:** ☐None ☐Location Map ☐Sketch Map ☐Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (list)

State of California — The Resources Agency **Primary #**_____
DEPARTMENT OF PARKS AND RECREATION **HRI#**_____

BUILDING, STRUCTURE, AND OBJECT RECORD

Page 2 **of** 2 ***NRHP Status Code** 5D3

***Resource Name or #** N-206A

B1. Historic name: 12 ft. Pressure Wind Tunnel Auxiliaries
B2. Common name: 12 ft. Pressure Wind Tunnel Auxiliaries
B3. Original Use: B4. Present use:
***B5. Architectural Style:** Moderne with 20th-Century Industrial influences
***B6. Construction History:** (Construction date, alterations, and date of alterations)
1946 – Date of Construction; 1994 – Exterior and interior alterations

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:**_____ **Original Location:**_____
***B8. Related Features:**
Significant architectural features include the concrete exterior and steel-sash windows.

B9a. Architect: National Advisory Committee for Aeromautics (NACA) Engineers b. Builder:
***B10. Significance: Theme** Post-War Science and Space Exploration **Area** NASA Ames Research Center
Period of Significance 1940-1958 **Property Type** Research Facility **Applicable Criteria** 1 & 3
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity)
Building N-206A serves as an annex to Building N-206, the 12-ft pressure wind tunnel, which is the only large-scale pressurized, low turbulence, subsonic wind tunnel in the United States. This wind tunnel provides unique high-Reynolds number testing capabilities for the development of high-lift systems commercial transport and military aircraft, and for high angle-of-attach testing of maneuvering aircraft. It is contiguous with Building N-204A.

Building N-206A was one of several research and support buildings built between 1940 and 1958. Founded in 1939, the Ames Research Center was the second aeronautic research facility built for the National Advisory Committee for Aeronautics (NACA). This research center was vital in the development of the field of aeronautical research and science. Along with new research facilities such as wind tunnels and testing facilities, several support buildings were constructed for the staff, including offices, machine shops, manufacturing facilities, and laboratories. During this time period, these research and support buildings were rendered in an architectural vocabulary, which allowed for a variety of uses and a cohesive campus setting. These buildings were most often, one and two stories in height with concrete structural systems, unpainted concrete exteriors (with scored concrete detailing), and steel or wood-sash awning or hopper windows. They expressed Moderne architectural details with their scored exteriors, tripartite concrete panels (located between windows and doors), concrete entry canopies, and rectilinear configurations. Additionally, these buildings exhibited influences of 20th-Century Industrial architecture with their smooth, concrete exteriors and steel-sash awning and hopper windows. An important aspect of this building is its relationship to Building N-206. In the 1994 renovations, Buildings N-206 and N-206A were essentially shelled out, thus the building retains little architectural integrity. Building N-206A possesses integrity of location, setting, materials, feeling, and association.

B11. Additional Resource Attributes: (List attributes and codes) (HP39) -- Research and Development Building

***B12. References:**

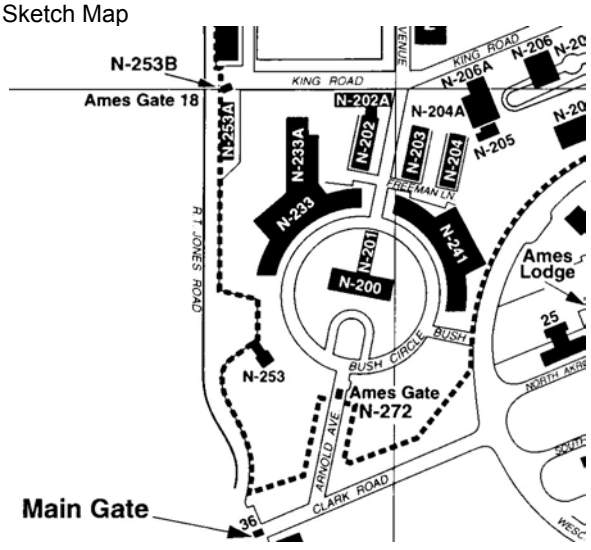
- Lori Neff, *Department of Parks and Recreation – Historic Resources Inventory "Bldg. N206A, 12 Ft. Pressure Wind Tunnel Auxiliaries,"* (1995).
- Edwin Hartman, *Adventures in Research: A History of Ames Research Center, 1940 – 1965* (NASA SP-4302, 1970).
- Elizabeth A. Muenger, *Searching the Horizon: A History of Ames Research Center, 1940 – 1976* (NASA SP-4304, 1985).
- Glenn Burgos, *Atmosphere of Freedom: Sixty Years at the NASA Ames Research Center* (NASA SP-4314, 2000).

B13. Remarks:
In 1995, Section 110 survey documentation of the NASA Ames Research Center was submitted to the California State Historic Preservation Office (SHPO).

***B14. Evaluator:** Rich Sucre, Page & Turnbull, Inc.
724 Pine Street, San Francisco, CA 94108

(This space reserved for official comments.)

Sketch Map



***Date of Evaluation:** 10/18/2005